TECHNICAL MANUAL

UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL

(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)

DENTAL OPERATING AND TREATMENT UNIT, FIELD, PORTABLE, ADEC MODEL 3406 PORTA-CART

6520-01-272-4531

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HEADQUARTERS, DEPARTMENT OF THE ARMY

1991

Throughout this manual are WARNINGS, CAUTIONS, and NOTES. Please take time to read these. They are there to protect you and the equipment.

WARNING

Procedures which must be observed to avoid personal injury, and even loss of life.

CAUTION

Procedures which must be observed to avoid damage to equipment, destruction of equipment, or long-term health hazards.

NOTE

Essential information that should be remembered.

TECHNICAL MANUAL

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC

UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) DENTAL OPERATING AND TREATMENT UNIT, FIELD, PORTABLE, ADEC MODEL 3406 PORTA-CART 6520-01-272-4531

You can help improve this manual. If you find any mistakes or if you know a way to improve procedures, please let us know. Mail your memorandum, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 (Recommended Changes to Equipment Technical Publications) located in the back of this manual, to: Commander, U.S. Army Medical Materiel Agency, ATTN: SGMMA-M, Frederick, MD 21702-5001. A reply will be furnished directly to you.

Approved for public release; distribution is unlimited.

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HOW TO USE THIS MANUAL

☐ This manual provides all the information needed to understand the capabilities, functions, and characteristics of this equipment. It describes how to set up, operate, test, and repair the item. You must familiarize yourself with the entire manual before operating or beginning a maintenance task.

☐ The manual is arranged by chapters, sections, and paragraphs followed by appendixes, a glossary, an index, and DA Forms 2028-2. Use the table of contents to help locate the chapter or section for the general subject area needed. The index will help locate more specific subjects.

☐ Multiple figures and tables are provided for your ease in using this manual. Words that are both capitalized and in quotation marks are names of components or words that you will actually see on the equipment.

☐ Chapter 3 provides a systematic method of inspecting and servicing the equipment. In this way, small defects can be detected early before they become a major problem causing the unit to fail to complete its mission. Make a habit of doing the checks and services in the same order each time and anything wrong will be detected quickly.

☐ Specific direct support and general support maintenance instructions are included. Only perform maintenance functions specified in the maintenance allocation chart for your level of maintenance. Maintenance functions specified for higher levels of maintenance frequently require additional training; test, measurement, and diagnostic equipment; or tools.

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. Scope.

This manual describes the dental unit; provides maintenance personnel with equipment technical data and installation procedures; and provides operational and maintenance functions, services, and actions. Additional information follows:

a. Type of manual. Unit, direct support (DS), and general support (GS) maintenance (including repair parts and special tools list).

b. Model number and equipment name. ADEC 3406 Porta-Cart, Dental Operating and Treatment Unit, Field, Portable.

c. Purpose of equipment. To provide an integral system for dental treatment with operating accessories, control systems, and work surface.

1-2. Explanation of abbreviations and terms.

Special or unique abbreviations, acronyms, and terms used within this manual are explained in the glossary.

1-3. Maintenance forms, records, and reports.

TB 38-750-2 prescribes forms, records, reports, and procedures.

1-4. Destruction of Army materiel to prevent enemy use.

AR 40-61 contains instructions for destruction and disposal of Army medical materiel. Also, the SB 8-75 series publications provide periodic information and/or instructions on the disposal of medical materiel that are hazardous.

1-5. Administrative storage.

a. Placement of the dental unit in administrative storage should be for short periods of time when a shortage of maintenance effort exists. Items should be in mission readiness condition within 24 hours or within the time factors as determined by the directing authority. During the storage period, appropriate maintenance records will be kept.

b. Army equipment placed in administrative storage will have preventive maintenance performed in accordance with the preventive maintenance checks and services (PMCS) listed in table 3-1 before storage. When equipment is removed from storage, PMCS will be performed to ensure operational readiness.

c. Inside storage is preferred for equipment selected for administrative storage.

1-6. Preparation for storage or shipment.

Refer to chapter 3, section VIII for the procedures used to prepare the dental unit for storage or shipment.

1-7. Quality assurance or quality control (QA or QC).

TB 740-10/DLAM 4155.5/AFR 67-43 contains QA or QC requirements and procedures.

1-8. Nomenclature cross-reference list.

Table 1-1 identifies official versus commonly used nomenclatures.

Table 1-1. Nomenclature cross-reference list.

Common name	Official nomenclature
ASE	Automatic saliva ejector
AVS handpiece	Air vacuum system handpiece
AVS waste container	Air vacuum system waste container
Dental unit	Dental operating and treatment unit, field, portable, ADEC model 3406 porta-cart
Packing, preformed	O-ring

1-9. Reporting and processing medical materiel complaints and/or quality improvement reports.

AR 40-61 prescribes procedures for submitting medical materiel complaints and/or quality improvement reports for the dental unit.

1-10. Warranty information.

A warranty is not applicable.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-11. Equipment characteristics, capabilities, and features.

a. The dental unit is a compact, portable, and self-contained unit that uses compressed air, pressurized water, and vacuum to provide dental hygiene and dental treatment services.

b. The unit can use bottled gases (nitrogen or carbon dioxide) in lieu of compressed air.

1-12. Description of significant components.

The dental unit contains a dual handpiece control system consisting of a master block assembly and two control block assemblies.

a. The master block assembly contains the air coolant flow control, the water coolant control valve, and the syringe flow controls. The working components are accessible from the front of the unit and are of "cartridge" design which permits services without disconnecting the tubing.

b. The control block assemblies are used to control the route of water and air coolant to the dental handpieces.

1-13. Tabulated data.

The tabulated data provides the dimensions, specifications, and miscellaneous data for the dental unit.

a. Dimensions, specifications, and characteristics. Tables 1-2 through 1-4 provide a broad range of dimensions, specifications, and miscellaneous characteristics.

Table 1-2. Dimensions.

Case	
Length	22 1/2 in (57.2 cm)
Width	20 in (50.8 cm)
Height	11 1/2 in (29.2 cm)

Table 1-2. Dimensions - continued.

Unit	
Length	18 1/4 in (46.4 cm)
Width	15 1/2 in (39.4 cm)
Height	32 in (81.3 cm)
Tray	
Length	15 1/8 in (38.4 cm)
Width	10 5/8 in (26.9 cm)

Table 1-3. Specifications.

Pressure	
Water	30 to 40 psi
Air	60 to 80 psi
Nitrogen/Carbon dioxide	80 to 100 psi

Table 1-4. Miscellaneous characteristics.

Air supply tube	10 ft
Funnel	3 1/4 in od
Oral evacuator tip	7/16 in od by 6 in

b. Identification, instruction, and warning plates, decals, or markings. An air relief valve is located on the end of the case. Loosen this valve to equalize pressure before opening the case.

1-14. Model differences.

Model differences are not applicable since this manual covers a single model. However, design changes in assemblies, subassemblies, or components occur periodically. Information on such engineering changes will be published in supply bulletins and subsequent changes to this manual.

1-15. Safety, care, and handling.

a. Observe each WARNING, CAUTION, and NOTE in this manual. The use of compressed air and pressurized water may be hazardous to personnel.

b. Ensure that the air supply is shut off or disconnected when the dental unit is not in use.

c. Follow the manufacturer's instructions for the use of chemical cleaning solutions and lubricants.

Section III. PRINCIPLES OF OPERATION

1-16. Control functions.

The dental unit is operated by controlling compressed air and pressurized water. Unit controls and associated components described in subparagraphs 1-16a through 1-16 l are illustrated in figure 1-1.

a. Air coolant flow control. This control knob adjusts the flow of air coolant to the handpieces. The control is off when turned fully clockwise.

b. Water coolant "ON-OFF" toggle. This control is used to shut off the flow of water coolant to the handpieces.

*c. Water coolant flow control*s. These two control knobs adjust the flow of water coolant to each of the handpieces.

d. Automatic handpiece holder. This assembly contains an internal valve which activates the flow of drive air and coolant to the handpiece.

e. Handpiece lockout toggle. This control overrides the automatic handpiece control to lock out a handpiece when both handpieces are out of their holders at the same time. The toggle is positioned toward the red dot for normal operation and away from the red dot to lock out a handpiece.

f. Water pressure "ON-OFF" toggle. This control is used to either pressurize or to relieve pressure from the water tank.

g. Water outlet. This component is provided for connecting accessories to the self-contained water supply.

h. Oral evacuator flow control. This control knob adjusts the vacuum generated in the air vacuum system (AVS) handpiece. Turn this knob clockwise to decrease the vacuum.

i. Saliva ejector air flow control. This control knob adjusts the amount of suction generated in the air saliva ejector. Clockwise rotation of the knob decreases suction or shuts off the automatic saliva ejector (ASE).

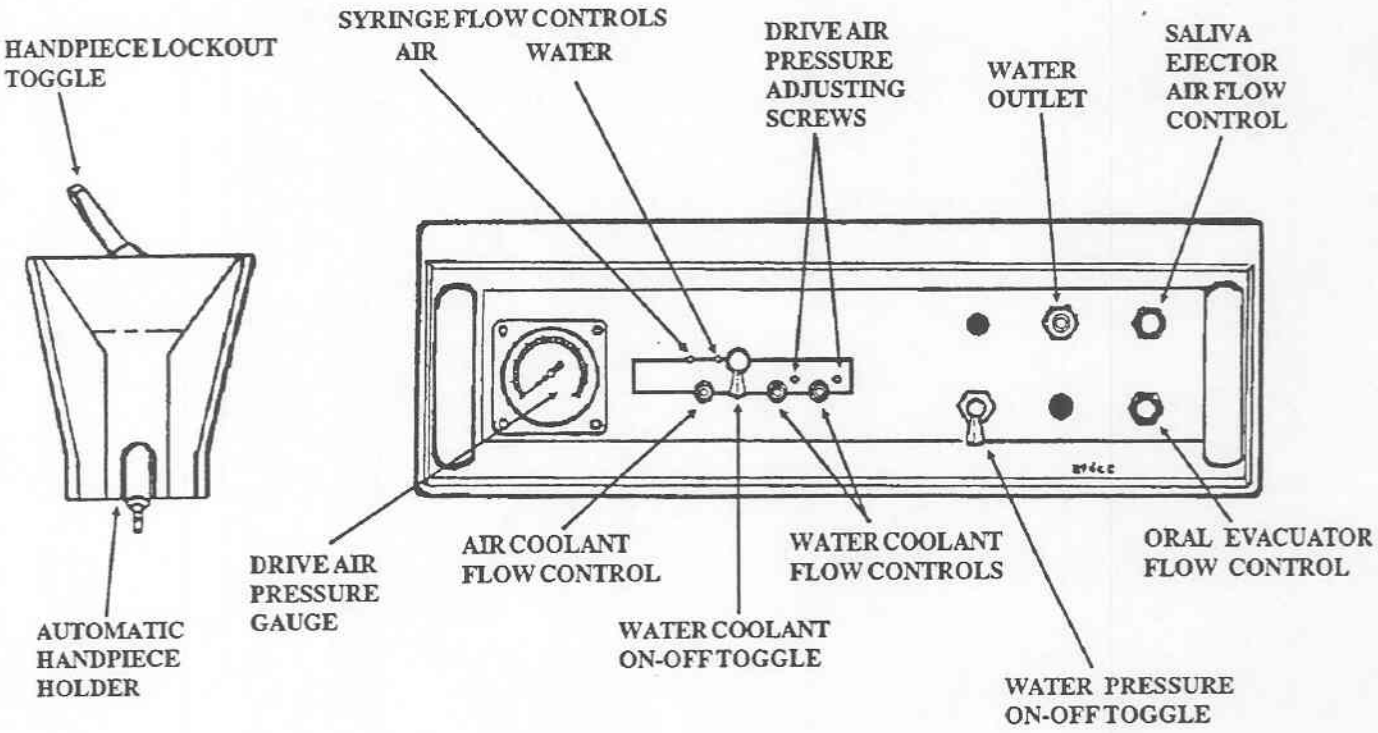

Figure 1-1. Controls and associated components.

j. Syringe flow controls - air and water. These controls adjust the flows of syringe air and water.

k. Drive air pressure adjusting screws. These controls allow for adjustment of drive air pressure to each handpiece.

l. Drive air pressure gauge. This component indicates the pressure of the drive air to an operating handpiece.

m. Foot control valve. This valve controls the handpiece rotation speed and provides an air signal for the air and water coolants.

n. Chip blower. This valve on the foot control provides a jet of air from the handpiece air coolant tube when the handpiece is not operating.

1-17. Control block assemblies.

a. Description. The control block assemblies are used to control the routing of water coolant and air to the handpieces. The control blocks are used in conjunction with the master block assembly and a manual selector valve to comprise a complete handpiece control system.

b. Operating principles.

(1) Each control block assembly has laterally-drilled passages for drive air, water coolant, air coolant/chip blower, and signal air (fig 1-2). These passages align with the outlet passages in the end of the block assembly. In each block, the lateral passages intersect with longitudinal passages that lead to the front surface of the block. Parallel to these passages, other longitudinal passages lead to the handpiece drive air barb, the handpiece pressure gauge, the handpiece air coolant barb, and the cap of the water valve (fig 1-3). It is here, at the front of the block assembly that the air from the foot control is either held back or allowed to flow through and operate the handpiece.

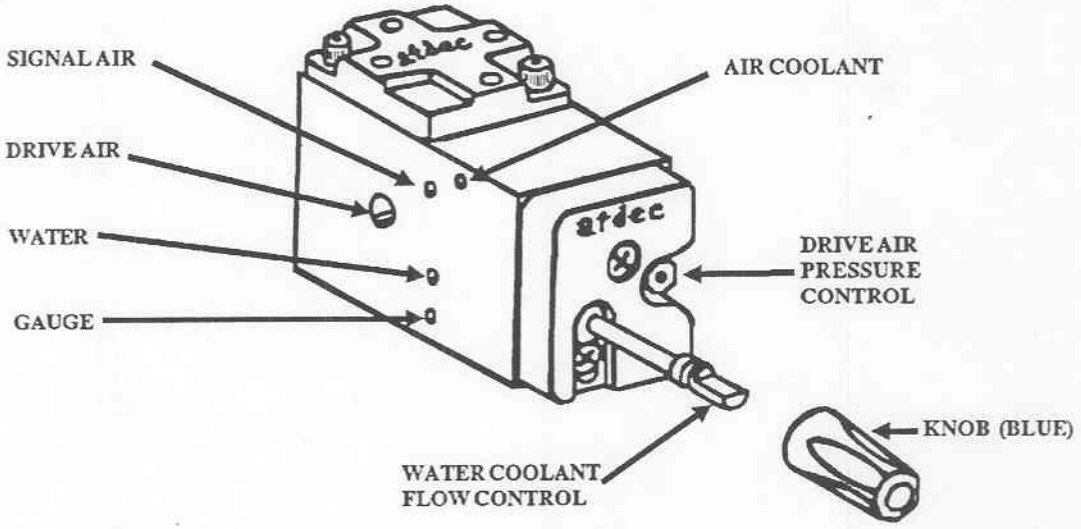

Figure 1-2. Control block assembly.

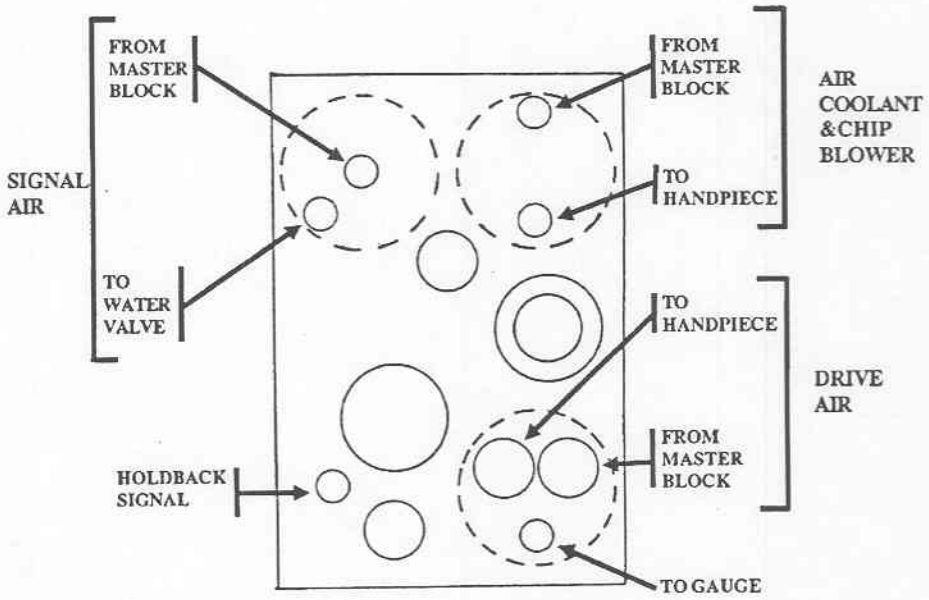

Figure 1-3. Control block detail (front view).

(2) The front cover of the block assembly has three cavities in the inner surface (fig 1-4). As indicated by the broken lines, these cavities in the cover correspond in location to the three groups of passages drilled in the front of the assembly block. When the block is assembled, with the diaphragm in place between the assembly block and the cover, the cavities allow the diaphragm to deflect from the surface of the block and allow air to flow between the grouped passages. However, the flow between the grouped passages can occur only if the diaphragm is allowed to deflect into the cavities of the cover. Air pressure from the handpiece selector valve applied into the cavities presses and holds the diaphragm against the block. This prevents any flow between passages and the handpiece cannot operate.

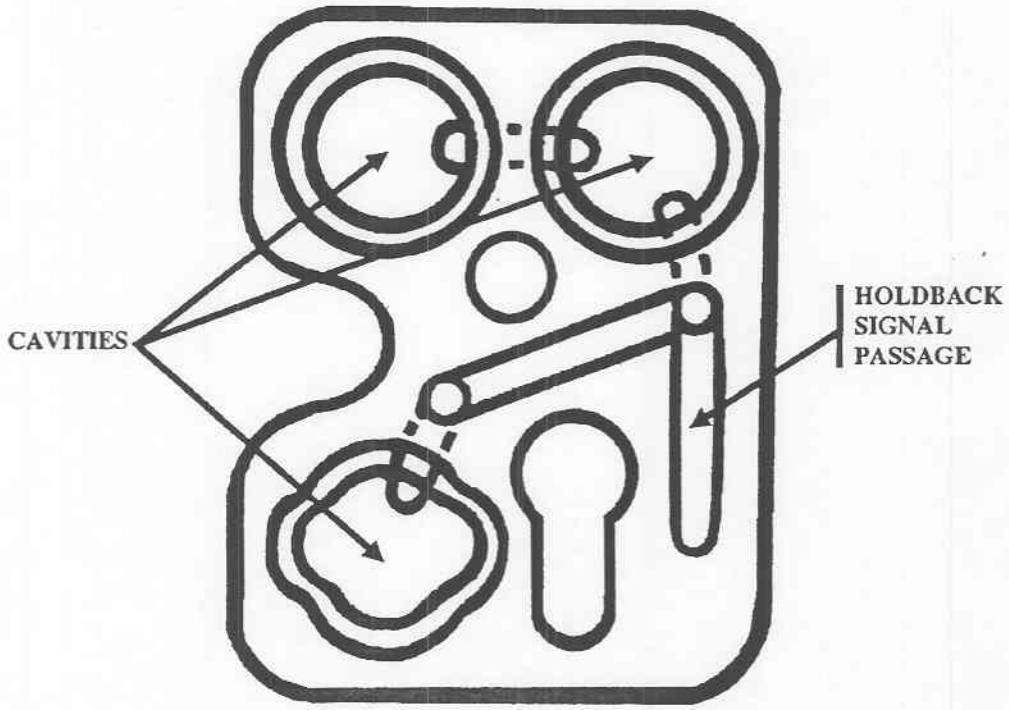

Figure 1-4. Control block front cover detail (inner surface).

(3) The handpiece selector valve supplies the holdback signal that pressurizes cavities in the cover and shuts off the block assembly for the handpiece that is not being used. The selector valve releases the holdback signal from the block assembly for the selected handpiece and allows air to pass through the block to the handpiece.

(4) Water coolant for a handpiece is controlled by an integral water valve in the control block assembly. The water is supplied through a passage from the master block assembly. This passage intersects with the water coolant flow control valve bore. After passing the needle valve seat, the water flows to the inlet seal at the bottom of the water valve stem. Unless the water valve is actuated, the flow of water is blocked at this point.

(5) Actuation of the water valve occurs when air pressure is applied above the water valve diaphragm in the water valve cap. The cross-section view (fig 1-5) depicts how the signal air reaches the water valve cap after passing the holdback diaphragm at the front of the control block. When the signal air reaches the water valve cap, the air deflects the diaphragm downward. This in turn pushes the stem downward and unseats the inlet seal to allow water to flow through the valve to the barb. Releasing the signal pressure allows the spring to push the stem and diaphragm upward to close the valve. This movement of the stem and diaphragm creates a momentary low pressure at the outlet barb as the valve closes. As a result, a small quantity of water is drawn back into the valve to prevent dripping from the handpiece.

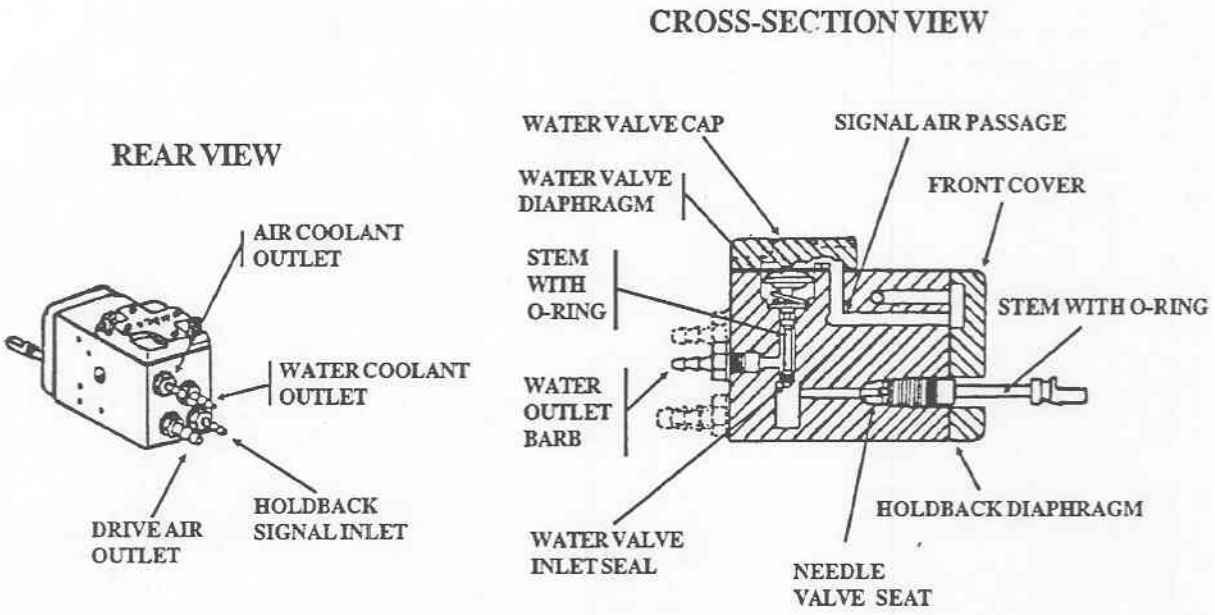

Figure 1-5. Water valve.

1-18. Signal relay valve.

The signal relay valve (fig 1-6) is a three-way valve mounted on the foot control valve body to provide the air and water coolant signals to the handpieces. The valve is activated by air pressure from the foot control valve outlet. This deflects the diaphragm and moves the stem to close the exhaust seal and open the inlet seal. A flow of air, at regulated supply pressure, passes through the signal relay valve to the outlet. When the foot control is released, the diaphragm and stem return to their original positions.

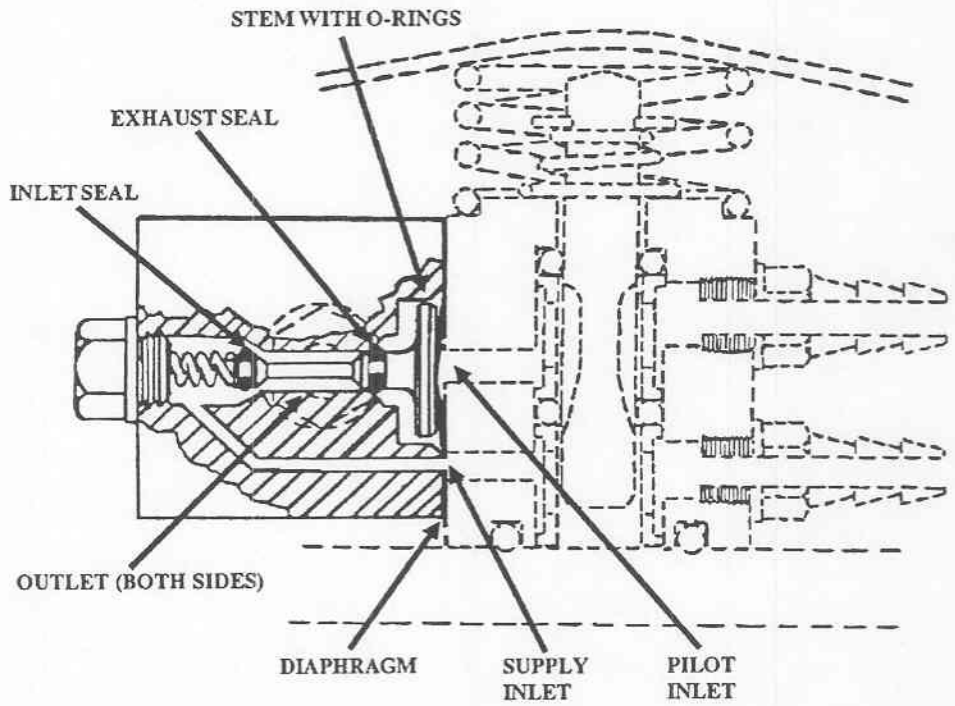

Figure 1-6. Signal relay valve.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. OPERATING PROCEDURES

2-1. Initial procedures.

Detailed procedures for unpacking, assembling, and preparing the dental unit for operation are provided in paragraph 3-7. Procedures for shutdown are provided in paragraph 2-1c.

a. Start-up procedures.

(1) Ensure that the water pressure "ON-OFF" toggle is turned "OFF."

(2) Depress the vent button on the water tank cap (fig E-14) to ensure that the tank has no air pressure.

(3) Remove the water tank cap and using a funnel, fill the tank.

(4) Replace the water tank cap and ensure that the vent button is not in the locked position.

(5) Install a sterilized syringe tip, an oral evacuator tip, and a saliva ejector mouthpiece.

NOTE

Only sterilize the two tips and mouthpiece when patient treatment is involved.

(6) Connect the air supply tubing to a supply of dry, filtered air or bottled gas regulated from 80 to 100 psi.

(7) Turn the water pressure "ON-OFF" toggle to the "ON" position.

(8) Check the air pressure gauge for a reading of 60 to 80 psi.

(9) Check the water pressure gauge for a reading of 30 to 40 psi.

(10) Check the AVS oral evacuator by pressing the AVS handpiece button to actuate the vacuum. The amount of suction generated by the AVS handpiece can be increased or decreased by turning the oral evacuator flow control knob.

(11) Check the saliva ejector by turning the saliva ejector air flow control to vary the amount of suction.

NOTE

The ASE control shuts off the suction when turned fully clockwise.

b. Procedures during patient treatment. The various functions of the dental unit will be controlled by a dental technician or dentist during patient treatment.

c. Shutdown procedures.

NOTE

Use the shutdown procedures when the dental unit is shut down for any period in excess of 8 hours.

(1) Turn the water pressure toggle to the "OFF" position.

(2) Insert the quick-disconnect fitting (contained in the accessory kit) into the water outlet on the control panel.

(3) Turn the water pressure toggle to the "ON" position and allow the water tank to completely drain; then turn the toggle to the "OFF" position.

(4) Remove the quick-disconnect fitting and put it back in the accessory kit.

(5) Clean the AVS handpiece and ASE by following the cleaning procedures in paragraph 2-2.

(6) Empty the AVS waste container, then clean and disinfect it.

(7) Clean and lubricate the handpieces by following the lubrication procedures in paragraph 3-8.

(8) Ensure that the external air supply is turned off. Disconnect the tube and bleed the air pressure from the unit by depressing the syringe air button.

(9) Clean the external surfaces.

Section II. OPERATIONAL CARE

2-2. Cleaning, disinfecting, and sterilizing procedures.

a. Cleaning.

(1) *External surfaces.* All external surfaces should be cleaned with a solution of hot water and liquid detergent.

CAUTION

Abrasive cleansers and scrubbing pads will damage the surface finishes and should never be used.

(2) *Internal assemblies and components*. When servicing the dental unit, the components of any assembly should be thoroughly cleaned and inspected for defects prior to reassembly. The most effective cleaner is a hot detergent solution. Any wiping should be done with a soft, lint-free cloth. When the components are clean, they should be flushed with clear, hot water and then rinsed in isopropyl alcohol.

NOTE

The lubricant used in the dental unit is largely impervious to chemical solvents. Therefore, a hot detergent solution is the most effective cleaner.

(3) *Air vacuum system*. The AVS system (fig 2-1) should be cleaned as follows:

(a) *After each patient*. Rinse the AVS by drawing clean water through the handpiece and then drawing air through the system for a few seconds to remove all water from the tubes. Remove the oral evacuator tip and clean it with a hot detergent solution.

(b) *Daily*. Clean the AVS handpiece using a cleaner with disinfectant properties by following the manufacturer's instruction. In addition, use the brush provided in the accessory kit to insert into the handpiece in order to clean the lower portion. Then, rinse with clean water. Finally, hold the control button down until all the water has been purged from the tubing.

(c) *Weekly*. Clean the strainer by removing the waste container, unscrewing the collector cup, and removing any debris.

(d) *As required.* The waste container should be cleaned each time it is emptied.

(4) *Automatic saliva ejector.* The ASE system should be cleaned as follows:

(a) *After each patient.* Remove the ASE mouthpiece and clean with a hot detergent solution.

(b) *Weekly.* Clean the strainer by removing the ASE cap, unscrewing the knurled screw holding the strainer, and removing any debris.

b. Disinfecting.

(1) *External surfaces*. All external surfaces of the dental unit should be carefully wiped with disinfectant between patients.

CAUTION

Disinfectants that will not damage the surface finishes include-- hypochlorite solution of one part Clorox® or Purex® to ten parts of water; gluteraldehyde solution; Cydex®, phenolics such as Lysol®; and isopropyl alcohol.

(2) *AVS and ASE components.* The saliva ejector mouthpiece, oral evacuator tip, and the waste container should be disinfected using products specified in the previous CAUTION.

c. Sterilizing. Syringe tips, oral evacuator tips, and surgical tips should be sterilized before use, using the following procedures.

NOTE

Before sterilization, all components should be thoroughly cleaned with surgical soap.

(1) *Syringe tips*. Sterilize using steam, chemical vapor, or dry heat.

(2) *Stainless steel oral evacuator tips.* Sterilize using steam, chemical vapor, or dry heat.

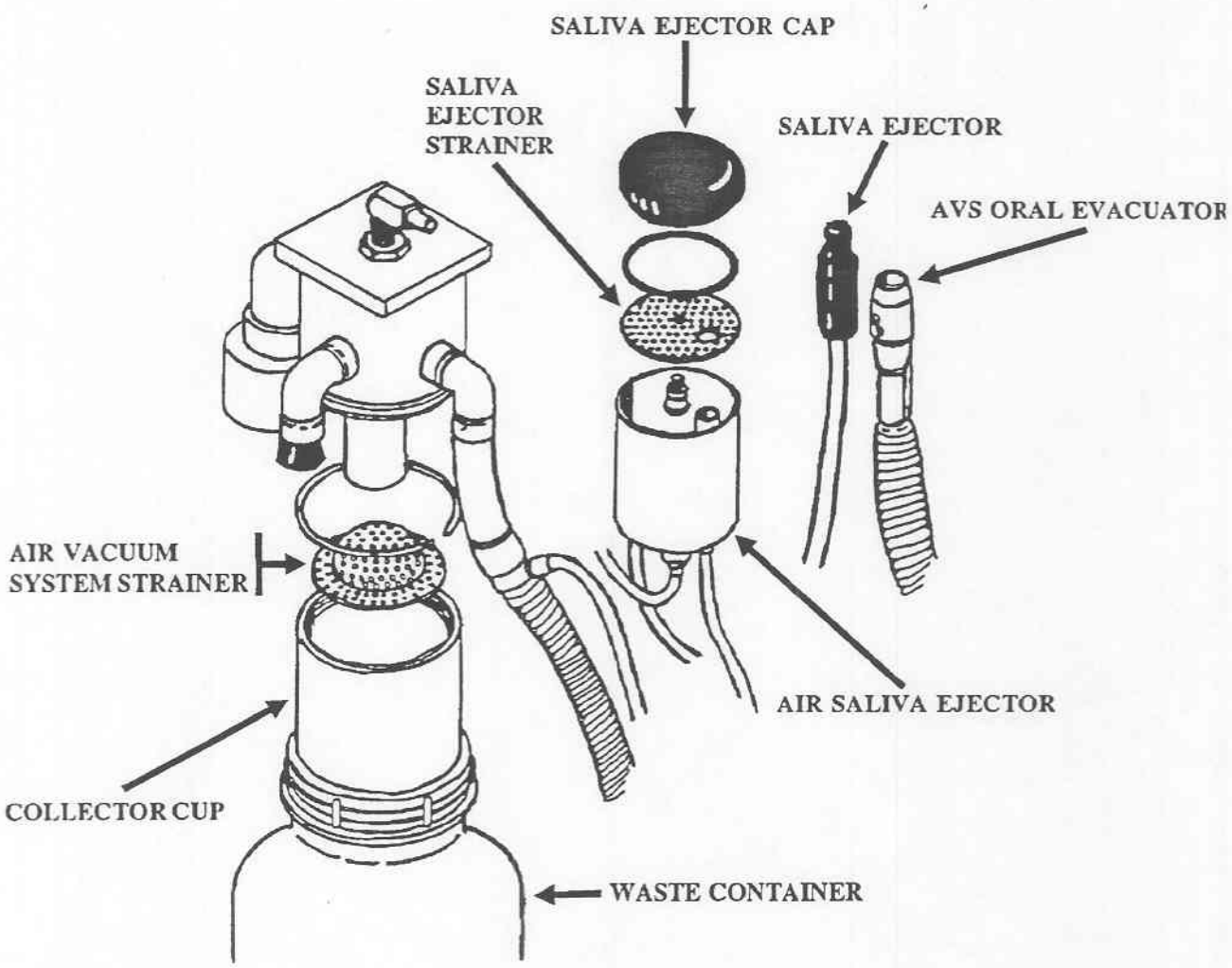

Figure 2-1. AVS and ASE assemblies.

Section III. OPERATION OF AUXILIARY EQUIPMENT.

2-3. Operation of auxiliary equipment.

The dental unit is used with the following items of equipment: Light Set, Dental Operating, Field; Chair and Stool Unit, Dental Operating; and Compressor, Dental Operating.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-4. Operation under unusual conditions.

Operation of the dental unit under unusual conditions, such as in dusty environments, may require more frequent intervals of PMCS.

CHAPTER 3

UNIT LEVEL MAINTENANCE

Section I. GENERAL INFORMATION

3-1. Overview.

Maintenance functions, both preventive and corrective, that are beyond the scope of the user are assigned to unit level medical equipment repairer personnel. These personnel will perform the majority of maintenance required for the dental unit except for some tasks involving the master block assembly, control block assemblies, cabinet, and case. This chapter provides instructions and information to aid in performing the required tasks.

3-2. Tools and test equipment.

Common tools and test equipment required for maintenance of the dental unit are listed in appendix B, section III of this manual. Refer to your unit's modified table of organization and equipment (MTOE) for authorized items.

3-3. Components of end item and basic issue items.

Components of end item and basic issue items are listed in appendix C, sections II and III of this manual.

3-4. Expendable supplies.

Expendable and durable supplies and materials required for maintenance of the dental unit are listed in appendix D, section II of this manual.

3-5. Repair parts.

Repair parts required for unit level maintenance are listed in appendix E, section II of this manual.

3-6. Special tools.

Special tools required for maintenance of the dental unit are listed in appendix E, section III of this manual.

Section II. SERVICE UPON RECEIPT OF EQUIPMENT

3-7. Inspecting and servicing the unit.

The dental unit will be unpacked, inspected, and serviced as described in the following subparagraphs. Discrepancies must be reported in accordance with the instructions given in AR 40-61.

a. Unpacking the unit.

(1) Remove the shipping container if not previously removed.

(2) Loosen the air relief valve which is located on the end of the case.

(3) Unlatch the case, remove the lid, and remove the protective foam pad.

(4) Lift the unit from the case. Also remove the waste container, accessory kit, and post assembly. Set the case aside.

(5) Open the accessory kit and remove the 3/4 inch open-end wrench.

(6) Remove the cap screw that secures the frame base to the underside of the unit using the wrench.

(7) Fasten the post assembly to the frame base using the cap screw and wrench.

NOTE

For maximum unit mobility, the casters from the accessory kit may be installed at this time. Remove the foot pads using a 5/32 inch hex wrench, insert the casters into the same holes, and secure the casters with the cap screws from the foot pads. Place the foot pads into the accessory kit.

(8) Stand the frame base upright.

(9) Install the unit on the post by tightening the thumbscrews.

(10) Remove the foot control secured on the underside of the unit with an elastic cord. Carefully draw out the foot control tubing from inside the unit.

(11) Set the dental unit upright.

(12) Lift off the top of the unit.

(13) Loosen the thumbscrews that secure the instrument hanger bar assemblies upside down in the unit.

(14) Locate and install the hanger bar assemblies to the outside of the unit.

(15) Uncoil the AVS handpiece and ASE tubings and feed them out through the bottom of the unit. Place the ASE tip and the AVS handpiece in their hangers.

(16) Feed the handpiece tubings and syringe out through the bottom of the unit. Place them in their hangers.

(17) Install the handpieces from the accessory kit onto their tubings.

(18) Screw the AVS waste container onto the bottom of the AVS assembly.

(19) Connect the 10-foot air supply tubing to the quick-disconnect on the short supply tubing under the unit.

(20) Secure the accessory kit and case.

b. Inspecting the unit.

(1) Perform a visual inspection to detect any damage which may have occurred to the dental unit.

(2) Check the unit frame by adjusting it to several different heights.

(3) Perform a thorough inspection for leaks after checking the control functions in paragraph 1-16 and performing the initial procedures in paragraph 2-1.

(4) Report damage and/or discrepancies in components or operation in accordance with established procedures.

c. Servicing the unit.

NOTE

Additional servicing instructions and procedures may be incorporated into either the PMCS table (para 3-9) or the maintenance instructions (para 3-13 through para 3-23).

(1) *Syringe.*

(a) Change the syringe tip by loosening the nut approximately 1/2 turn.

(b) Pull the tip out with a straight motion.

(c) Insert a replacement tip by pushing it completely into the syringe seat and tighten the nut.

CAUTION

A syringe tip that is not fully seated may cause the water button to be ejected from the syringe when the air button is depressed.

(2) *Drive air pressure.*

CAUTION

To preclude damage to the unit, adjust the drive air pressure to the specifications of the handpiece manufacturer.

NOTE

The drive air pressure adjusting screws are located next to the water coolant knobs on the faceplate of the unit (fig 1-1).

(a) Install a dental tool in the handpiece chuck.

(b) Operate the handpiece and observe the drive air pressure gauge.

CAUTION

The handpiece should not be operated more than a few seconds at a time unless a dental tool is actually performing its function. The drive air pressure adjustment should be completed in several steps to prevent damage to the handpiece.

(c) With the foot control fully depressed, adjust the drive air adjusting screws until the handpiece runs at the maximum pressure specified by the manufacturer.

NOTE

Turn the drive air pressure adjusting screws clockwise to decrease pressure or counterclockwise to increase pressure.

(3) *Handpiece coolant flow.*

(a) Ensure that the water coolant toggle is in the "OFF" position and a dental tool is installed in the handpiece.

(b) Operate the handpiece at medium speed while observing the preceding CAUTION .

(c) Adjust the air coolant flow as desired.

NOTE

A strong air coolant flow is recommended.

(d) Turn the water coolant flow control clockwise until it seats softly.

(e) Operate the handpiece and turn the water coolant flow control counterclockwise until a fine mist is visible around the dental tool.

(f) Adjust the second handpiece by following the preceding steps.

(4) *Syringe flow.*

NOTE

The syringe flow adjusting screws are located above the air coolant flow control on the faceplate of the unit (fig 1-1).

(a) Depress the water button.

(b) Adjust the water flow by turning the adjusting screw clockwise to decrease flow or counterclockwise to increase flow.

(c) Depress both buttons (air and water) simultaneously and adjust the air flow to achieve the desired spray pattern.

CAUTION

The syringe flow adjusting screws are not intended to completely stop the flow of air and water. Forcing the screws to turn off the water or air will damage the unit.

Section III. LUBRICATION INSTRUCTIONS

3-8. General.

All lubrication requirements for the dental unit can be performed using a high quality silicone base grease. All internal moving parts of mechanical valves and controls should be coated with a light film of silicone grease. O-rings should also be coated before they are installed. This makes their installation easier and prevents damage to the o-rings. Seal bores should also be lightly lubricated before inserting stems or pistons.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

NOTE

The PMCS chart in this section contains all necessary unit level services for the dental unit.

3-9. General.

a. The dental unit must be inspected and serviced systematically to ensure that the unit is ready for operation at all times. Inspection will allow defects to be discovered and corrected before they result in serious damage or failure. Table 3-1 contains a list of PMCS items to be performed by unit level maintenance personnel.

b. Preventive maintenance is not limited to performing the checks and services listed in the PMCS table. There are things you should do any time you see they need to be done, such as checking for general cleanliness, observing for improper operational indicators, and maintaining the proper quantities of operating supplies.

c. The following is a list of the PMCS table column headings with a description of the information found in each column:

(1) *Item No.* This column shows the sequence in which to do the PMCS, and is used to identify the equipment area on the Equipment Inspection and Maintenance Worksheet, DA Form 2404.

(2) *Interval.* This column shows when each PMCS item is to be serviced; **B** - Before Operation, **D** - During Operation, **A** - After Operation, **M** - Monthly, **Q** - Quarterly. **B**, **D**, and **A** should be performed with daily use of the unit.

NOTE

When the equipment must be kept in continuous operation, check and service only those items that will not disrupt operation. Perform the complete daily checks and services when the equipment can be shut down.

(3) *Item to be Inspected and Procedure.* This column identifies the general area or specific part to be checked or serviced.

(4) *Equipment is not Ready/Available If:.* This column lists conditions that make the equipment unavailable or unusable.

Table 3-1. Preventive maintenance checks and services.

ITEM NO	INTERVAL					ITEM TO BE INSPECTED AND PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:
	B	D	A	M	Q		
1	X		X		X	**ACCESSORIES.** Check that the following accessories are present, not damaged, and capable of performing their function. a. Tray b. Kit, accessory	Tray is missing. Kit is missing or critical components are missing or damaged.

Table 3-1. Preventive maintenance checks and services - continued.

ITEM NO	INTERVAL B	D	A	M	Q	ITEM TO BE INSPECTED AND PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:
2	X	X			X	**AIR SYSTEM.** a. Check that the hose can be connected to the air supply. b. Check that the unit pressurizes.	Unit cannot be properly connected. Unit does not pressurize correctly.
3	X	X	X	X	X	**WATER SYSTEM.** a. Check the gauge for tank pressure. b. Check for any water leak.	Tank does not pressurize correctly. There is a water leak.
4	X	X			X	**HANDPIECES.** Test the two handpieces for proper operation.	Either handpiece does not properly operate.
5	X	X			X	**AUTOMATIC SALIVA EJECTOR.** Test the saliva ejector for proper operation.	Automatic saliva ejector fails to operate or fails to provide a variable volume.
6	X	X			X	**ORAL EVACUATOR.** Test the oral evacuator for the correct operation.	Oral evacuator fails to operate or operates incorrectly.
7	X	X	X		X	**SYRINGE.** Activate the syringe and test its full range of operations.	Syringe operates incorrectly or completely fails to operate.
8	X	X	X		X	**AUTOMATIC HANDPIECE HOLDER.** Test for activation and inactivation of air and water to the handpieces.	Holder does not operate properly.
9	X	X	X		X	**FOOT CONTROL.** Operate the foot control and test its full range of functions.	Control operates incorrectly or completely fails to operate.

3-10. Reporting deficiencies.

If operator personnel discover problems with the equipment during PMCS that they are unable to correct, they must report them. Refer to TB 38-750-2 and report the deficiency using the proper forms. Consult with your unit level medical equipment repairer if you need assistance.

Section V. FUNCTIONAL TESTING

3-11. Scope.

This section contains information for testing the dental unit. Perform these tests following the initial receipt and installation of the unit and semiannually thereafter.

a. Preventive maintenance checks and services. Perform the PMCS listed in paragraph 3-9 before performing functional testing.

b. Functional testing. Perform functional testing by following the procedures in paragraph 2-1.

Section VI. TROUBLESHOOTING

3-12. General.

a. Specific troubleshooting information for locating and correcting many of the operating malfunctions which may develop in the dental unit is located in tables 3-2 through 3-10. Symptoms are provided for common malfunctions. Each symptom is followed by possible causes, test procedures, and corrective actions. Upon

completion of the corrective action(s), the component or assembly should be cleaned and lubricated, then reassembled and the unit tested.

b. This manual cannot list all possible malfunctions. If a malfunction is not listed or is not determined by routine diagnostic procedures, notify your appropriate maintenance support unit.

Table 3-2. Master block troubleshooting.

SYMPTOM / POSSIBLE CAUSE	TEST PROCEDURE	CORRECTIVE ACTION
1. AIR OR WATER LEAKS FROM AROUND THE SYRINGE FLOW CONTROLS.		
Defective o-ring seal on the stem.	Disconnect the air supply, bleed the system pressure, and remove the flow control stem. Inspect the o-ring and bore for defects.	Replace any defective parts.
2. AIR LEAKS FROM THE WATER COOLANT TOGGLE VALVE WHEN TURNED ON.		
Defective exhaust seal in the valve.	Isolate the source of the leak using a soap solution. When testing for leaks from the valve, the foot control must be depressed. A leak around the toggle confirms that the exhaust seal is defective.	Remove and disassemble the valve. Inspect the exhaust seal area. Replace any defective parts.
Defective o-ring seal around the valve.	Check for leaks around the perimeter of the valve.	Remove the valve. Inspect the o-ring, seat, and bore. Replace any defective parts.
3. AIR LEAKS FROM THE WATER COOLANT TOGGLE VALVE WHEN TURNED OFF.		
Defective inlet seal or defective o-ring seal around the valve.	Remove the valve from the master block and inspect the o-ring around the rear of the valve, the o-ring seat, and the bore in the master block.	Replace any defective parts.
4. NO AIR COOLANT FROM EITHER HANDPIECE (WATER COOLANT WORKS PROPERLY).		
Obstructed air passage in the control block next to the master block.	Refer to the instructions in paragraph 3-17.	Take corrective action as indicated in paragraph 3-17.
The air coolant flow is not getting to the master block.	Remove the air coolant flow control valve from the master block. Turn the unit on and step on the foot control. Check for a stream of air coming from the needle valve bore in the master block.	Remove obstructions in the air coolant tube or the barb on the master block.
Debris lodged in the valve.	Disassemble and check for foreign material in the passages.	Carefully clean all passages. Check the filter in the air supply.
5. NO WATER COOLANT FROM EITHER HANDPIECE (AIR COOLANT WORKS PROPERLY).		
No water supply to the master block.	Verify that water is in the tank, then try spraying water from the syringe. Check at the water outlet on the front of the unit. Check for obstructions in the water tube or the inlet barb on the master block.	Remove obstructions.

Table 3-2. Master block troubleshooting - continued.

SYMPTOM / POSSIBLE CAUSE / TEST PROCEDURE / CORRECTIVE ACTION
The signal air is not getting to the master block.
While stepping on the foot control, turn the water coolant valve on and off. Listen for air to exhaust around the toggle each time you turn the valve off.
Remove obstructions in the signal air tube or the barb on the master block.
Clogged water passage in the master block.
Turn the water pressure toggle "OFF," then separate the control blocks from the master block. Momentarily turn the water pressure toggle "ON" and see if water comes from the end of the master block.
Run a small wire through the passage to dislodge debris from the master block.
The signal air is not getting through the master block.
Clamp hemostats on the red tube (oral cavity water) and the orange tube with black dashes (drive air) where they go into the master block. Step on the foot control. Turn the water coolant valve on and see if the signal air comes through the passage on the end of the master block.
Remove obstructions in the master block or water coolant valve.

Table 3-3. Control blocks troubleshooting.

SYMPTOM / POSSIBLE CAUSE / TEST PROCEDURE / CORRECTIVE ACTION
1. AUDIBLE AIR LEAK FROM THE CONTROL BLOCK AREA.
Loose connections.
Use a soap solution to locate the exact point of the leak.
Tighten the bolt that secures the blocks together and the screws that secure the water valve cap and front cover to the block.
Defective gasket, o-ring, or diaphragm seal.
Use a soap solution to locate the exact point of the leak.
For leaks between the blocks, replace the gaskets. For leaks between the block and the front cover, replace the holdback diaphragm. For a leak around the water valve cap, replace the water valve diaphragm.
2. WATER LEAKS FROM THE CONTROL BLOCK.
Loose connections.
Use a soap solution to locate the exact point of the leak.
Tighten the socket-head screws that secure the cap to the top of the block, or tighten the bolt that holds the blocks together.
Defective gasket or diaphragm seat.
Inspect the gasket and check for flaws in the sealing surfaces.
For a leak between the blocks, replace the gaskets. For a leak around the water valve cap, replace the diaphragm. Replace any defective parts.
3. AIR BUBBLES IN THE WATER COOLANT.
Low water level in the water tank.

Table 3-3. Control blocks troubleshooting - continued.

SYMPTOM
POSSIBLE CAUSE
TEST PROCEDURE
CORRECTIVE ACTION

Check the water tank to ensure that it has an adequate supply of water.

Refill the water tank.

Loose fasteners.

Check for movement.

Tighten the socket-head screws that secure the water valve cap to the control block, and tighten the bolt that secures the block together.

Cross-leaks under the water valve diaphragm.

Remove the cap from the top of the control block and carefully inspect the diaphragm and the surfaces of the block and cap.

Replace any defective parts.

4. WATER DRIPS CONTINUOUSLY FROM THE HANDPIECE WHILE THE UNIT IS ON, BUT NOT IN USE.

Improperly installed water valve cap.

Look at the top of the control block. The manufacturer's name should be right side up when viewed from the front of the unit.

Remove the cap and install it correctly.

Water valve stem is stuck or has a defective return spring.

Disconnect the air supply and release pressure from the water tank, then remove the cap and diaphragm from the control block. Press and release the water valve stem to check its freedom of movement.

Remove the stem and inspect it for defects. Replace any defective parts.

Defective inlet seal in the water valve.

Remove the stem and inspect the inlet seal o-ring.

Replace any defective parts.

Defective seat in the control block.

There is no test to verify this except the elimination of other possibilities as explained in the proceeding steps.

Replace the control block.

5. AIR OR WATER LEAKS FROM A HANDPIECE THAT IS NOT IN USE, ONLY WHEN ANOTHER HANDPIECE IS BEING USED.

The holdback diaphragm is defective or improperly installed.

Disconnect the air supply, then remove the front cover from the control block of the leaking handpiece. Check for defects in the diaphragm.

Reinstall the diaphragm or install a new one.

The front surface of the block is defective.

Visually inspect the front surface of the block in the area of the air passages.

Install a new control block.

6. RESTRICTED FLOW OF AIR OR WATER.

Debris blocking internal passages.

Check first for pinched tubing or other restrictions outside the control system. If you isolate the problem to the control system, remove the barbs and check for debris before you disassemble the master block or control blocks.

Clean all debris from the barbs and passages.

Table 3-3. Control blocks troubleshooting - continued.

SYMPTOM / POSSIBLE CAUSE / TEST PROCEDURE / CORRECTIVE ACTION
7. NO AIR OR WATER COOLANT FROM EITHER HANDPIECE.
Defective signal relay on the foot control.
Refer to the signal relay information in paragraph 1-18.
Repair as required.
8. NO AIR COOLANT FROM EITHER HANDPIECE (WATER COOLANT WORKS PROPERLY).
Obstructed air passage in the control block next to the master block.
Select one of the handpieces, then step on the chip blower button. If air comes from the handpiece, the control blocks are okay. If no air comes out, there is an obstruction at the joint between the master block and the first control block.
Disconnect the air supply and remove the bolt. Use a wire to probe the passages and dislodge any debris.
9. NO AIR COOLANT FROM ONE HANDPIECE.
Clogged tube in the handpiece.
Switch the handpieces around and test each one to determine whether the problem is in the handpiece or the control block.
Clean or replace the air coolant tube.
Clogged passage in the control block.
Disconnect the air supply, then remove the front cover and diaphragm from the control block. Remove the air coolant outlet barb from the back of the control block.
Run a wire through the passage to dislodge any obstructions.
10. NO WATER COOLANT FROM EITHER HANDPIECE (AIR COOLANT WORKS PROPERLY).
The water supply or the signal air is not getting to the control blocks.
Refer to the information in paragraph 3-17 to determine if the water supply and signal air are getting through the master block.
Repair as required.
Clogged passage in the control block nearest to the master block.
If the water and signal air are getting to the control blocks as confirmed by tests given in the master block instructions, remove and disassemble the control block nearest the master block.
Clean all internal passages. Inspect all parts and replace any that are defective.
11. NO WATER COOLANT FROM ONE HANDPIECE.
Improperly installed water valve cap.
Look at the top of the control block. The manufacturer's name should be right side up when viewed from the front of the unit.
Remove and install the cap correctly.
Leaking water valve diaphragm.
Remove the water valve cap and inspect the diaphragm for leaks.
Clean clogged passages and barbs. If water still leaks, install a new diaphragm.

Table 3-4. Three-way microvalve troubleshooting.

SYMPTOM / POSSIBLE CAUSE / TEST PROCEDURE / CORRECTIVE ACTION
1. AUDIBLE LEAK WHEN THE VALVE IS OFF.
Improper positioning of the microvalve in its mount.
Loosen the set screw in the mount and move the microvalve out slightly while listening for continued leaks.
Tighten the set screw to lock the valve in position.
Inlet seal does not fully close.
Turn the microvalve on and listen for continued leaks. Look for a loose connection on the inlet barb.
Tighten loose connections or replace any defective parts.
2. LEAKS FROM THE VALVE WHEN TURNED ON.
Improper positioning of the microvalve in its mount.
Loosen the set screw and push the microvalve further into its mount while listening for continued leaks.
Tighten the set screw to lock the valve in place.
Exhaust seal does not fully close.
With a hemostat, clamp off the tube connected to the inlet barb, then disassemble the valve. Inspect all parts in the exhaust seal area for defects or debris.
Clean debris from the valve or replace any defective parts.
3. VALVE DOES NOT EXHAUST WHEN TURNED OFF.
Improper positioning of the microvalve in its mount.
Loosen the set screw in the mount and move the microvalve out slightly while listening for a short burst of air exhausting from the valve.
Tighten the set screw to lock the valve in position.
The exhaust seal o-ring is installed in the wrong groove on the stem. (This applies only to stems manufactured after mid-1978.)
With a hemostat, clamp off the tube connected to the inlet barb, then disassemble the valve. Of the two closely-spaced grooves in the exhaust end of the stem, the exhaust seal o-ring belongs in the one closer to the end. The other groove should be empty. (Stems manufactured before mid-1978 do not have this groove.)
If the o-ring is in the wrong groove, move it to the correct groove. If the o-ring is correctly installed, remove debris in the exhaust seal area.
4. NO AIR FLOWS THROUGH THE VALVE WHEN TURNED ON.
Improper positioning of the microvalve in its mount.
Loosen the set screw and push the microvalve further into the mount.
Tighten the set screw to lock the valve in position.
No air pressure at the valve inlet.
Disconnect the tube from the inlet barb and check for air coming from the tube.
If no air comes from the tube, look for a problem on the outlet side of the valve.
Debris inside the microvalve.
Clamp off the inlet tube with a hemostat, then disassemble the valve and inspect for defects or debris.
If no debris or defects are noted, look for a blockage in the tubing on the inlet side of the valve.

Table 3-5. Foot control valve troubleshooting.

SYMPTOM / POSSIBLE CAUSE / TEST PROCEDURE / CORRECTIVE ACTION
1. AUDIBLE LEAK WHILE THE FOOT CONTROL IS NOT BEING USED.
Loose mounting screws.
Turn the foot control face down and check the tightness of the two phillips-head screws at the center of the baseplate.
Tighten the two phillips-head screws.
Loose connection.
Remove the foot control cover and use a soap solution to locate the source of the leak. For a leak from the signal relay, refer to the instructions covering the signal relay in paragraph 1-18.
If the air is leaking around the barb connection, tighten the barb and retest the valve. If the air is leaking from the exhaust vent or around the bottom of the valve body, proceed with the next step.
Defective o-rings or sealing surfaces.
Turn the unit off and bleed the air pressure. Disassemble the foot control. Inspect the o-rings and sealing surfaces for defects and debris.
Remove debris or replace the o-rings.
2. INADEQUATE AIR FLOW FROM THE FOOT CONTROL.
Pinched tubing going to or from the foot control.
Inspect the foot control tubing for crimps or restrictions.
Replace the tubing.
Obstruction at the inlet or outlet.
With the cover removed, depress the piston and check for adequate air flow.
Replace any defective parts.
3. FOOT CONTROL IS SLUGGISH.
Sticking stem.
Remove the valve body from the base. Remove and inspect the o-rings and spacers for debris or defective parts.
If there is any sticking or binding, remove the stem, spacers, and o-rings. Replace any defective parts.

Table 3-6. Signal relay valve troubleshooting.

SYMPTOM / POSSIBLE CAUSE / TEST PROCEDURE / CORRECTIVE ACTION
1. NO SIGNAL FROM THE SIGNAL RELAY VALVE.
Signal relay installed upside down.
Visually check the signal relay valve. It must be positioned as shown in figure 1-6 in order for the inlet passage to line up with the passage on the foot control valve body.
Remove it and install it properly.

Table 3-6. Signal relay valve troubleshooting - continued.

SYMPTOM POSSIBLE CAUSE TEST PROCEDURE CORRECTIVE ACTION
Defective or improperly installed diaphragm.
Remove the signal relay from the foot control and check for defects, debris, or improper installation. The holes in the diaphragm must be aligned with the passages in the valve bodies.
Replace any defective parts.
2. AIR SIGNAL FROM THE SIGNAL RELAY DOES NOT SHUT OFF.
The stem return spring is missing.
Remove the hex plug from the end of the signal relay valve and verify that the spring is in place.
If the spring is missing or defective, replace it.
The valve stem is stuck in the open position.
Disassemble the signal relay valve and inspect all parts for defects, debris, or improper installation.
Replace any defective parts.
3. AUDIBLE AIR LEAK WHILE THE UNIT IS NOT IN USE.
Improper seating of the diaphragm.
Use a soap solution to locate the source of the leak.
If the leak is at the diaphragm line, tighten the signal relay mounting screws. If leaking persists, replace the diaphragm.
Signal relay inlet seal does not fully close.
If the leak is from the exhaust holes, shut the unit off, then remove the signal relay from the foot control. Inspect the stem, o-rings, and seats for debris or defects.
Replace any defective parts.
4. AUDIBLE AIR LEAK WHILE THE UNIT IS IN USE.
Improper seating of the diaphragm.
Depress the foot control until the relay is actuated. While listening to the leak, depress the foot control all the way.
If the leaking increases with pressure on the foot control, tighten the signal relay mounting screws. If the leak persists, replace the diaphragm.
Signal relay exhaust seal does not fully close.
While the foot control is depressed, check for leaks from the exhaust holes in the signal relay body.
Tighten the barb or the sleeve as necessary to stop the leak. If air comes from the exhaust holes, inspect the exhaust seal area for debris or defects. Replace any defective parts.

Table 3-7. Chip blower valve (two-way microvalve) troubleshooting.

SYMPTOM POSSIBLE CAUSE TEST PROCEDURE CORRECTIVE ACTION
1. AIR LEAKS PAST THE VALVE WHEN TURNED OFF.
Improper positioning of the microvalve in its mount.
Loosen the set screw in the mount, and move the microvalve out slightly while listening for continued leaks.
Tighten the set screw and lock the valve in position.

Table 3-7. Chip blower valve (two-way microvalve) troubleshooting - continued.

SYMPTOM / POSSIBLE CAUSE / TEST PROCEDURE / CORRECTIVE ACTION
Inlet seal does not fully close.
Turn the microvalve on, and listen for continued leaks.
Look for a loose connection on the inlet barb. Replace any defective parts.
2. AIR LEAKS AROUND THE STEM WHEN THE VALVE IS ON, AND/OR OUTLET PRESSURE EXHAUSTS WHEN THE VALVE IS OFF.
Leaks past the stem seal.
Use a hemostat to clamp off the tube connected to the inlet barb, then disassemble the valve. Inspect all internal parts and surfaces for debris or defects.
Replace any defective parts.
The stem seal o-ring is installed in the wrong groove.
Disassemble the microvalve and inspect the stem. Of the two closely-spaced grooves in the outlet end of the stem, the o-ring belongs in the one further from the end. The groove closer to the end should be empty.
Move the o-ring to the correct groove.
3. NO AIR FLOWS THROUGH THE VALVE WHEN TURNED ON.
Improper positioning of the microvalve in its mount.
Check the position of the microvalve.
Loosen the set screw and push the microvalve further into the mount. Tighten the set screw.
No air pressure at the valve inlet.
Disconnect the tube from the inlet barb and check for air coming from the tube.
If no air comes from the tube, look for a problem in the inlet circuit of the valve.
Debris inside the microvalve.
Clamp off the inlet tube with a hemostat. Disassemble the valve and inspect for debris or defects.
If no debris or defects are noted, look for a blockage in the tubing in the outlet circuit of the valve.

Table 3-8. Three-way toggle valve troubleshooting.

SYMPTOM / POSSIBLE CAUSE / TEST PROCEDURE / CORRECTIVE ACTION
1. AUDIBLE LEAK WHEN THE VALVE IS OFF.
Inlet seal does not fully close.
Turn the valve on and listen for continued leaks. Inspect the inlet seal area.
Replace any defective parts.
2. THE VALVE LEAKS WHEN TURNED ON.
Loose connection at the outlet fitting.
Use a soap solution to locate the leak.
Tighten or replace the barb, sleeve, or washer, as necessary.

Table 3-8. Three-way toggle valve troubleshooting - continued.

SYMPTOM / POSSIBLE CAUSE / TEST PROCEDURE / CORRECTIVE ACTION
Exhaust seal does not fully close.
Clamp off the tube connected to the inlet with a hemostat. Disassemble the valve. Inspect all parts in the exhaust seal area for defects or debris.
Replace any defective parts.
3. VALVE DOES NOT EXHAUST WHEN TURNED OFF.
The exhaust seal o-ring is installed in the wrong groove on the stem.
With a hemostat, clamp off the tube connected to the inlet. Disassemble the valve. Of the two closely-spaced grooves near the head of the stem, the exhaust seal o-ring belongs in the one closer to the head. The other groove should be empty.
Move the o-ring to the correct groove.
4. LOOSE TOGGLE.
The toggle pin is part way out.
Inspect the pin and the valve mounting nut. The outer nut should cover the toggle pin holes to keep the pin in place.
If the toggle pin is still in place, the hole in the toggle is worn. A new toggle should be installed. If the pin is loose, work it into place and install the mounting nut so it covers the toggle pin holes.

Table 3-9. Needle valve troubleshooting.

SYMPTOM / POSSIBLE CAUSE / TEST PROCEDURE / CORRECTIVE ACTION
1. NO FLOW THROUGH THE NEEDLE VALVE.
Obstruction in the barb or valve body.
Verify that there is a flow at the valve inlet. Turn the control knob counterclockwise to open the valve. Clamp the inlet tube.
Remove debris.
2. LEAKS AROUND THE STEM.
Defective o-ring seal around the stem.
Use a hemostat to clamp off the tube connected to the inlet bard. Disassemble the valve. Inspect all internal parts and surfaces for defects and debris.
Replace any defective parts.
3. FLOW CONTROL CANNOT BE ADJUSTED.
Stripped threads on stem.
Use a hemostat to clamp off the tube connected to the inlet bard. Disassemble the valve. Inspect all internal parts and surfaces for debris or defects.
Replace any defective parts.

Table 3-10. Air regulator troubleshooting.

SYMPTOM / POSSIBLE CAUSE	TEST PROCEDURE	CORRECTIVE ACTION
1. LOW AIR PRESSURE.		
Clogged air filter disk.	Follow the testing procedure in paragraph 3-15.	Clean and reinstall the air filter disk following the procedures in paragraph 3-15.
Leaking purge valve.	Depress the purge valve several times to reseat the valve.	Clean debris from the valve and check for continued leaks. If the leak persists, replace the valve core.
Leaking filter bowl.	Check to assure that the bowl is screwed tightly onto the regulator.	Tighten the bowl and check for continued leaks. If the leak persists, replace the o-ring.
Leaking regulator housing.	Use a soap solution to locate the source of the leak.	Tighten the regulator cover. If the leak persists, replace the diaphragm.
2. HIGH PRESSURE.		
Leaking inlet seal.	Observe pressure rising when the unit is not in use.	Replace the inlet seat assembly.

c. A mechanical schematic is provided in figure 3-1 for detailed troubleshooting and failure analysis.

Section VII. MAINTENANCE INSTRUCTIONS

3-13. General.

This section of the manual contains procedures for the repair of defective assemblies or components and the subsequent repair or replacement of RX or new items.

3-14. Water filter. (Refer to figure E-1.)

a. Testing.

(1) Remove the top of the unit.

(2) Connect the air supply to the unit.

(3) Fill the tank of the unit with water.

(4) Depress a syringe air button and observe the air pressure drop.

NOTE

The maximum water pressure drop should be less than 10 psi.

b. Removal, repair or replacement, and installation.

(1) Vent the water tank by depressing the syringe air button to relieve the pressure.

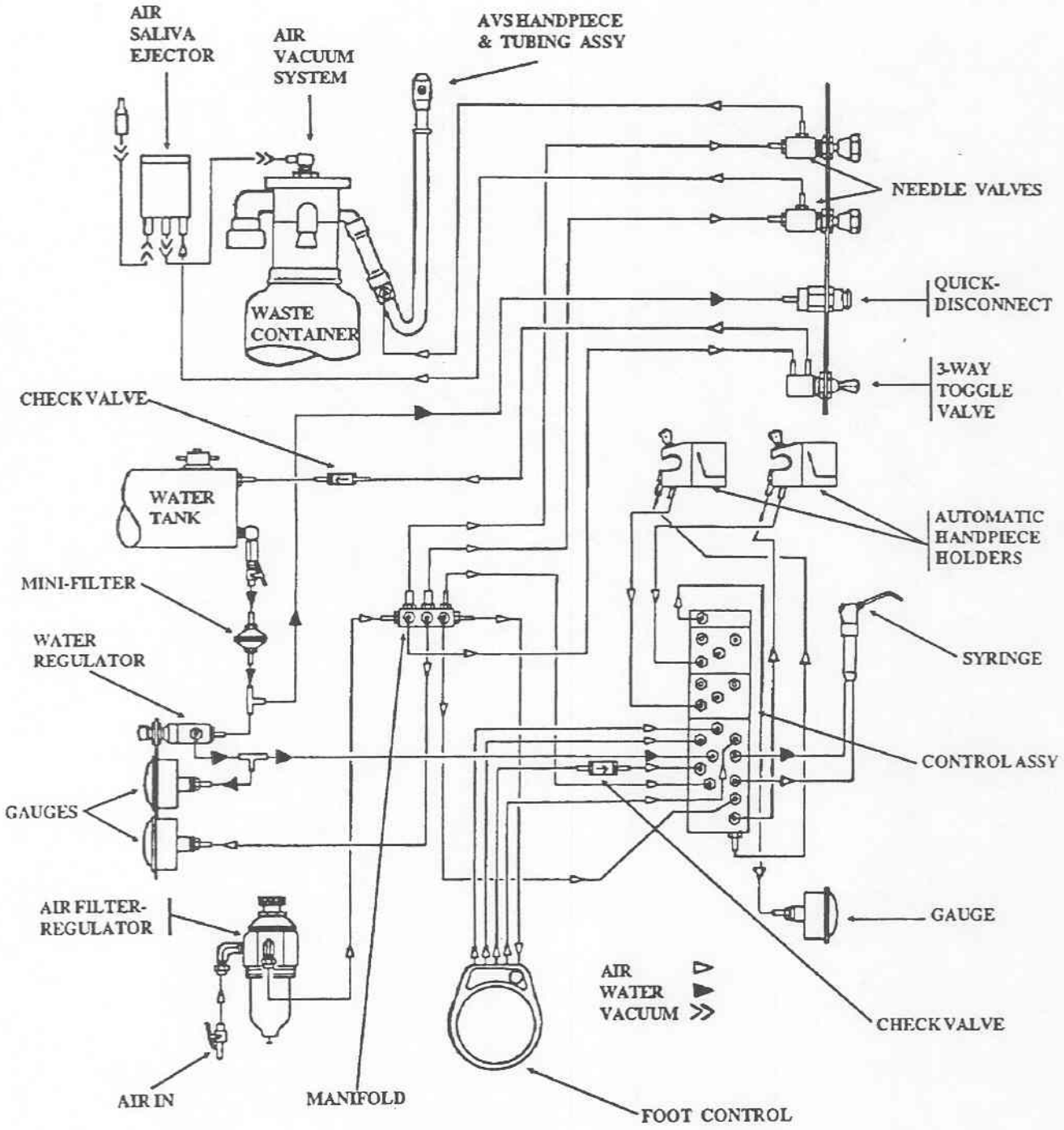

Figure 3-1. Mechanical schematic.

(2) Remove the two screws holding the filter housing together.

(3) Separate the filter housing and remove the filter disk.

(4) Clean the disk with isopropyl alcohol or replace it as required.

(5) Dry the disk using the AVS handpiece.

(6) Clean the o-ring and inspect it for damage or wear.

(7) Install an o-ring using a small amount of lubricant.

(8) Reassemble the o-ring and filter disk into the filter housing.

(9) Replace the two screws.

(10) Connect the air supply, pressurize the water tank, and repeat the preceding test.

3-15. Air filter. (Refer to figure E-2.)

a. Testing.

(1) Remove the top of the unit.

(2) Connect the air supply to the unit.

(3) Fill the tank of the unit with water.

(4) Depress a syringe water button and observe the water pressure drop.

NOTE

The maximum air pressure drop should be less than 15 psi.

b. Removal, repair or replacement, and installation.

(1) Disconnect the air supply to the unit.

(2) Depress the syringe air button to vent the water tank.

(3) Unscrew the bowl from the air filter and then unscrew the filter element.

(4) Install a replacement filter and replace the filter bowl.

(5) Connect the air supply, pressurize the water tank, and repeat the preceding test.

NOTE

The air filter also serves as a moisture separator. When water accumulates in the bowl, it should be released by pressing the purge valve.

3-16. Water regulator. (Refer to figure 3-1.)

The water regulator is a not a repairable assembly. An external leak around the inlet or outlet can be corrected by tightening the fittings or replacing the nylon washers. Leaks around the adjusting knob or erratic water pressure are indications of internal leaks which require replacement of the regulator.

3-17. Master block assembly. (Refer to figures 3-2 and E-3.)

*a. T*he water coolant control (cartridge valve) and the air coolant flow control (needle valve) are normally more economical to replace than to repair. Use the following procedures to remove, repair, and reinstall the valves if a replacement valve is not readily available.

(1) Disconnect the air supply to the unit.

(2) Vent the water tank by depressing the syringe air button to relieve the pressure.

(3) Remove the knobs from the air and water coolant flow controls.

(4) Remove the two screws that secure the master block assembly to the faceplate.

(5) Move the assembly backward to allow access to the valves.

CAUTION

Ensure that all air pressure has been bled from the dental unit.

(6) Loosen the set screw on the bottom of the assembly that locks each valve in place.

(7) Pull the valve out of the assembly.

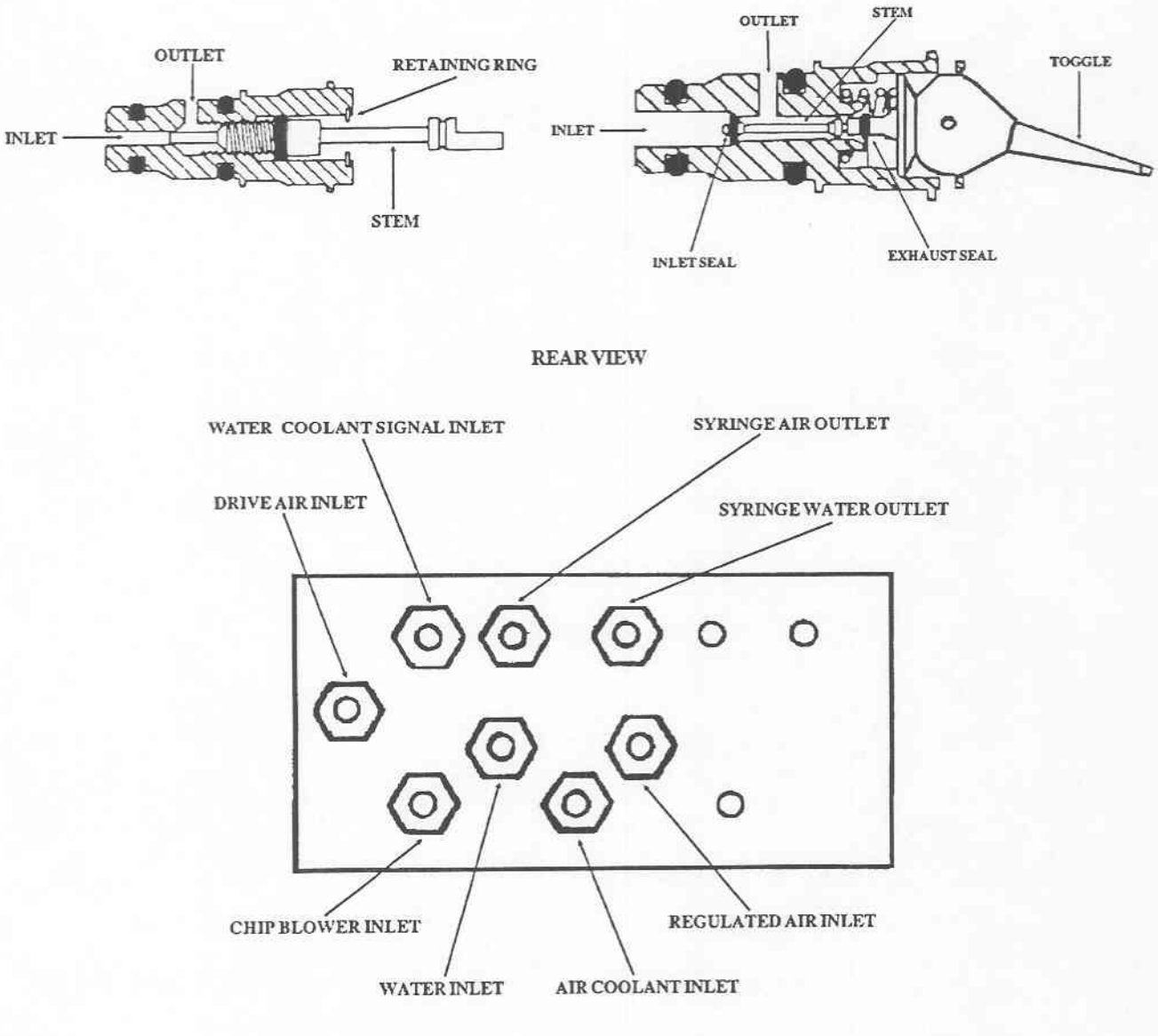

Figure 3-2. Master block assembly.

NOTE

If you can't pull the valve with your hands, use pliers on the valve toggle or the stem.

(8) Inspect the valve for wear or damage.

(9) Disassemble the valve by following the breakout illustration (fig 3-2) and repair as required.

(10) Reassemble the valve.

(11) Lightly coat the o-rings with silicone grease.

(12) Push the valve into the assembly block until it is fully seated.

NOTE

Ensure that the toggle is properly oriented relative to the "ON" and "OFF" positions.

(13) Tighten the set screw on the bottom of the assembly block.

(14) Move the assembly forward and replace the two screws to secure the assembly block to the faceplate.

(15) Replace the valve.

b. Test the individual valves or the master block assembly by following the procedures contained in paragraph 2-1a.

3-18. Microvalve. (Refer to figure E-5.)

This microvalve, used in the automatic handpiece holders, is normally considered a consumable item. It can be serviced (if a replacement valve is not readily available) by removing the valve from the automatic holder valve and extracting the stem and spring to replace the o-rings.

3-19. Chip blower valve. (Refer to figure E-7.)

The chip blower valve (two-way microvalve) is a subassembly of the foot control valve. It is normally considered a consumable item. It can be serviced (if a replacement valve is not readily available) by removing it from the actuator and extracting the stem and spring to replace the o-rings.

3-20. Toggle valve. (Refer to figure E-8.)

This valve is serviced by removing the toggle pin from the neck of the valve body and removing the toggle, stem, and spring. After inspecting and replacing worn or damaged o-rings, reassemble the valve.

NOTE

The toggle can be installed in any of four different positions. Ensure that the toggle is installed to match the lettering on the faceplate of the unit.

3-21. Syringe. (Refer to figure E-10.)

a. Button or tip leaks.

(1) Push the retainer pin completely out of the syringe head using a paper clip or other similar device.

(2) Remove the faulty button assembly.

CAUTION

A spring is located inside the syringe head underneath the button assembly. Be careful that this spring does not fall out and get misplaced while you have the button assembly removed.

(3) Apply a light coating of silicone lubricant around the outside of the o-rings on a replacement button assembly.

(4) Install the replacement assembly.

(5) While firmly holding down both buttons, reinsert the retainer pin.

CAUTION

Damage to the o-rings or the brass spool can occur if the two buttons are not depressed while inserting the retainer pin.

b. Syringe tip leak.

(1) Loosen the tip nut.

(2) Remove the tip.

(3) Remove the nut.

(4) Remove the o-ring inside the nut and the o-ring around the insert using a pointed instrument.

(5) Apply a light coat of silicone lubricant to new o-rings and carefully install them.

(6) Reinstall the nut, but do not tighten it.

(7) Install a syringe tip and ensure that it is firmly seated.

(8) Tighten the tip nut.

c. Leak between air and water passages.

NOTE

This problem is indicated by a momentary spray of water from a syringe tip when the air button is depressed.

(1) Remove the nut and tip as explained in the preceding instructions.

(2) Remove the insert from the syringe head using a 5/32 inch hex wrench.

(3) Remove the o-ring by using a pointed instrument.

(4) Apply a light coat of silicone lubricant to a new o-ring, then install it in the insert seat.

(5) Reassemble the insert, nut, and tip.

(6) Test the syringe.

d. Syringe handle leak.

(1) Turn the water pressure toggle to the "OFF" position.

(2) Disconnect the air supply and depress both syringe buttons to relieve the pressure from the dental system.

(3) Unscrew the syringe handle.

(4) Remove the connector tubes.

(5) Use a pointed instrument to remove the o-rings.

(6) Apply a light coat of silicone lubricant to the new o-rings, then install them on the connector lines.

(7) Reinstall the connector tubes and syringe handle.

(8) Activate the unit and test the syringe.

3-22. AVS handpiece assembly. (Refer to figure E-11.)

a. Button replacement.

(1) Remove the button retainer screw.

(2) Pull the button from the handpiece.

(3) Use the special tool to remove the spring.

(4) Install the new spring.

(5) Replace the button and retainer screw.

(6) Test the handpiece.

b. Tube replacement.

NOTE

The AVS air supply tube is inside the flexible drain tube.

(1) Turn off the air supply to the AVS oral evacuator.

(2) Separate the flexible drain tube from the handpiece and from the tubing adapter at the other end.

(3) Unscrew the terminal nuts and retain them for reuse.

(4) Remove the air supply tubing.

NOTE

If the flexible drain tubing is to be reused, trim the ends slightly to remove any damaged or deformed tubing.

(5) Slip the terminal nuts onto the new air supply tubing.

(6) Push one end of the tubing onto the tubing adapter and then tighten the terminal nut.

NOTE

Do not tighten the terminal nut excessively or the tubing will slip out of the nut and come loose from the terminal.

(7) Feed the air supply tubing through the flexible drain tubing. Then, push the drain tubing onto the tubing adapter as far as it will go.

(8) Lay the tubing in a straight line without stretching or compressing it. Mark the air supply tube at the point where the drain tubing ends. Cut the air supply tubing one inch short of that mark.

(9) Connect the air supply tube to the handpiece and tighten the terminal nut.

(10) Turn on the air supply and check for leaks. If no leaks occur, push the flexible drain tubing onto the handpiece.

3-23. Air saliva ejector. (Refer to figure E-13.)

a. Jet assembly (venturi) replacement.

(1) Close the saliva ejector flow control.

(2) Remove the cap from the saliva ejector body.

(3) Remove the slotted screw.

(4) Pull out the venturi.

NOTE

Verify that air is reaching the saliva ejector by momentarily opening the saliva ejector flow control.

(5) Insert a replacement venturi.

(6) Replace the slotted screw and the saliva ejector cap.

(7) Test the assembly.

b. Saliva ejector tubing replacement.

(1) Close the saliva ejector flow control.

(2) Remove the hose adapter fastening the tubing to the saliva ejector body.

(3) Pull the tubing from the adapter.

(4) Remove the strain relief spring and install it on a replacement tube.

(5) Insert the adapter into the tubing and connect it to the saliva ejector body.

(6) Test the assembly.

Section VIII. STORAGE AND SHIPMENT PROCEDURES

3-24. Preparation for storage or shipment.

This section contains the procedures for preparing the dental unit for storage and shipment within a case.

a. Storage procedures.

(1) Drain the water from the unit, syringes, and tubing.

(2) Disconnect the air supply to the unit.

(3) Clean the solid strainers.

(4) Purge the air from the unit.

(5) Perform all applicable PMCS procedures.

(6) Remove the syringes from their hangers and push them back through the bottom of the unit. Lay the syringes along the sides of the console.

(7) Pull the AVS oral evacuator and ASE tubings back into the unit. Coil the tubes around the inside of the console.

(8) Loosen the thumb screws that secure the instrument hanger bar assemblies to the unit. Lift the assemblies from their slots and reinstall them upside down inside the console.

(9) Push the foot control tubing up into the unit.

(10) Fasten the foot control to the unit using the elastic cord attached under the console.

(11) Loosen the thumbscrews securing the frame assembly to the console. Lift the console from the frame.

(12) If applicable, remove the casters by using a 5/32 inch hex wrench. Install the foot pads and pack the casters into the accessory kit.

(13) Remove the cap screw that secures the post assembly to the base of the frame by using a 3/4 inch open-end wrench from the accessory kit.

(14) Fasten the frame base to the underside of the console by using the cap screw from the preceding step.

(15) Pack all accessory kit items into their case.

(16) Pack the post assembly, waste container, and accessory kit into the dental unit case.

(17) Coil the air supply tubing and lay it in the bottom of the case.

(18) Position the foam insert and carefully place the unit into the case.

NOTE

The front of the console must face the side of the case with the air relief valve.

(19) Place the manuals into the tray on top of the unit.

(20) Place the foam pad over the unit and install the cover of the case.

(21) Close the air relief valve.

b. Shipment procedures. No special shipment procedures are required for unit movements. Crating is required for commercial transportation.

CHAPTER 4

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

Section I. GENERAL INFORMATION

4-1. Overview.

This chapter provides for maintenance that is beyond the capability, capacity, and authorization for unit level maintenance personnel. The procedures in this chapter should not be attempted at the unit level.

4-2. Support maintenance services.

Specified components or assembles identified in appendix B, section II, are only authorized for servicing by DS and GS maintenance units.

Section II. TROUBLESHOOTING

4-3. General.

There are no specific troubleshooting procedures at these levels of maintenance.

APPENDIX A
REFERENCES

A-1. Army regulations.

AR 40-61	Medical Logistics Policies and Procedures
AR 710-2	Supply Policy Below the Wholesale Level
AR 725-50	Requisitioning, Receipt, and Issue System
AR 750-1	Army Materiel Maintenance Policy and Retail Maintenance Operations
AR 750-43	Test, Measurement, and Diagnostic Equipment Program

A-2. Technical manual.

TM-DPSC-6500-RPL	Medical Materiel: Medical Repair Parts Reference List

A-3. Technical bulletins.

TB 38-750-2	Maintenance Management Procedures for Medical Equipment
TB 43-180	Calibration and Repair Requirements for the Maintenance of Army Materiel
TB 740-10/DLAM 4155.5/AFR 67-43	Quality Control, Depot Storage Standards, Appendix M, Medical Supplies
TB 750-8-1	Maintenance Expenditure Limits for Medical Materiel: FSC Groups (Medical Only)

A-4. Field manual.

FM 21-11	First Aid for Soldiers

A-5. Supply bulletins.

SB 700-20	Army Adopted/Other Items Selected for Authorization/List of Reportable Items
SB 708-48	Cataloging Handbook H4/H8, Commercial and Government Entity (CAGE) Sections A & B

A-6. Other publications.

(These publications may be obtained from Commander, U.S. Army Medical Materiel Agency, ATTN: SGMMA-M, Frederick, MD 21702-5001.)

Operating and Maintenance Instructions, Porta-Cart 3406, ADEC Corporation

Operation and Maintenance Instructions, ADEC Syringes, ADEC Corporation

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. General.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance levels.

c. Section III lists the tools and test equipment required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions, explanatory notes, and/or illustrations required for a particular maintenance function.

B-2. Explanation of columns in section II.

a. Group Number, Column 1. The assembly group number (Group No.) column is a numerical group assigned to each assembly. The applicable assembly groups are listed in the maintenance allocation chart (MAC) in disassembly sequence beginning with the first assembly removed in a top down disassembly sequence.

b. Assembly Group, Column 2. This column contains a brief description of the components of each assembly group.

c. Maintenance Functions, Column 3. This column lists the various maintenance functions (A through K) and indicates the lowest maintenance level authorized to perform these functions. The symbol designations for the various maintenance levels are as follows:

C - Operator or crew

O - Unit maintenance

F - Direct support maintenance

H - General support maintenance

D - Depot maintenance

The maintenance functions are defined as follows:

A - Inspect. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

B - Test. To verify serviceability and to detect electrical or mechanical failure by use of test equipment.

C - Service. To clean, to preserve, to charge, and to add lubricants, cooling agents, and air. If it is desired that elements, such as painting and lubricating, be defined separately, they may be so listed.

D - Adjust. To rectify to the extent necessary to bring into proper operating range.

E - Align. To adjust specified variable elements of an item to bring it to optimum performance.

F - Calibrate. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

G - Install. To set for use in an operational environment such as tents or International Standards Organization shelters.

H - Replace. To replace unserviceable items with serviceable like items.

I - Repair. Those maintenance operations necessary to restore an item to serviceable condition through correction of material damage to a specific failure. Repair may be accomplished at each level of maintenance.

J - Overhaul. Normally the highest degree of maintenance performed by the Army in order to minimize time work in process consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribed by a maintenance standard in technical publications for each item of equipment. Overhaul normally does not return an item to like new condition.

K - Rebuild. The highest degree of material maintenance. It consists of restoring equipment as nearly as possible to new condition in accordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance level.

d. Tools and Equipment, Column 4. This column is provided for referencing by code, the tools and test equipment (sec III) required to perform the maintenance functions.

e. Remarks, Column 5. This column is provided for referencing by code, the remarks (sec IV) pertinent to the maintenance functions.

B-3. Explanation of columns in section III.

a. Reference Code, Column 1. This column correlates to section II, column 4.

b. Maintenance Level, Column 2. This column identifies the maintenance levels using the tools and test equipment.

c. Nomenclature, Column 3. This column identifies the tools and test equipment.

d. National Stock Number, Column 4. This column provides the national stock number (NSN) of the specific tools or test equipment.

B-4. Explanation of columns in section IV.

a. Reference Code, Column 1. This column correlates to section II, column 5.

b. Remarks, Column 2. This column provides supplemental information or explanatory notes pertinent to the maintenance function in section II.

Section II. MAINTENANCE ALLOCATION CHART FOR DENTAL UNIT

(1) GROUP NO.	(2) ASSEMBLY GROUP	(3) MAINTENANCE FUNCTIONS A	B	C	D	E	F	G	H	I	J	K	(4) TOOLS AND EQUIPMENT	(5) REMARKS
00	Dental Unit	O 1.5	O 0.5	O 0.6				O 1.0			F 8.0	D 9.0	01,02,03	CODE A
01	Air System												01,02	
011	Hose, Supply	O 0.1	O 0.2						O 0.2					
012	Air Regulator/Filter			O 0.6					O 0.6	O 1.1				
013	Manifold Assembly			O 0.8					O 0.6	O 0.8				
014	Gauge								O 0.3					
015	Valve, Check								O 0.3					
016	Master Block Assembly			O 0.2					O 1.0	O 1.4	F 2.0			
017	Needle Valve			O 0.2					O 0.3					
018	Toggle Valve								O 0.4	O 0.3				
019	Control Block								O 1.4					
02	Water System												01,02	CODE A
021	Tank			O 0.3					O 0.6	O 0.8	F 2.0			
022	Filter								O 0.6	O 0.8				

Section II. MAINTENANCE ALLOCATION CHART FOR DENTAL UNIT

(1) GROUP NO.	(2) ASSEMBLY GROUP	(3) MAINTENANCE FUNCTIONS A	B	C	D	E	F	G	H	I	J	K	(4) TOOLS AND EQUIPMENT	(5) REMARKS
023	Regulator			O 0.5					O 0.8					
024	Gauge								O 0.3					
025	Quick-disconnect								O 0.2	O 0.2				
03	Air Vacuum System												01,02	CODE A
031	AVS Assembly			O 0.4					O 1.1	O 1.4				
032	AVS Handpiece			O 0.4						O 1.5				
033	Waste Container			O 0.2					O 0.2					
04	Air Saliva Ejector												01,02	CODE A
041	Jet Assembly									O 1.2				
042	ASE Handpiece			O 0.4					O 0.6	O 0.6				
05	Foot Control Assembly												01,02	CODE A
051	Valve			O 0.4					O 0.8	O 1.1				
052	Relay, Signal			O 0.3					O 0.6	O 0.8				

Section II. MAINTENANCE ALLOCATION CHART FOR DENTAL UNIT

(1) GROUP NO.	(2) ASSEMBLY GROUP	(3) MAINTENANCE FUNCTIONS A	B	C	D	E	F	G	H	I	J	K	(4) TOOLS AND EQUIPMENT	(5) REMARKS
06	Accessories												01,02,03	CODE A
061	Syringe			O 0.3					O 0.8	O 1.0				
062	Handpiece			O 0.2								D 0.7		
07	Automatic Handpiece Holder			O 0.2					O 0.5	O 0.7			01,02	
08	Frame Assembly								O 0.4	O 1.0	F 1.0		01,02	CODE A
09	Case											D 2.0	01,02	CODE A

Section III. TOOLS AND TEST EQUIPMENT FOR DENTAL UNIT

(1) REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL STOCK NUMBER
01	O,F,H,D	Tool Kit, Medical Equipment Maintenance and Repair: Repairmans	5180-00-611-7923
02	O,F,H,D	Tool Kit, Medical Equipment Maintenance and Repair: Organizational	5180-00-611-7924
03	F,H	Shop Equipment, Medical Maintenance: Depot (MEDSOM) Maintenance	4940-00-594-6455

Section IV. REMARKS FOR DENTAL UNIT

(1) REFERENCE CODE	(2) REMARKS
A	Tools and test equipment are listed for each assembly group.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

C-1. Scope.

This appendix lists components of end item and basic issue items for the equipment to help you inventory items required for safe and efficient operation.

C-2. General.

The Components of End Item and Basic Issue Items lists are divided into the following sections.

a. Section II. Components of End Item. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the equipment in operation, to operate it, and to perform emergency repairs. Basic issue items must be with the equipment during operation and whenever it is transferred between property accounts. This manual is your authority to request or requisition basic issue items, based on MTOE authorization of the end item.

C-3. Explanation of columns.

The following provides an explanation of columns found in both listings:

a. Item Number, Column 1. This column indicates the item number assigned to the item.

b. National Stock Number, Column 2. This column indicates the national stock number assigned to the item.

c. Description, Column 3. This column indicates the federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the commercial and government entity (CAGE) code in parentheses followed by the part number.

d. Unit of Measure, Column 4. This column indicates the unit of measure used in performing the actual operational or maintenance function. This measure is expressed by a two-character alphabetical abbreviation. These abbreviations are listed in the glossary.

e. Quantity, Column 5. This column indicates the quantity (QTY) of the item(s) to be used with or on the equipment.

Section II. COMPONENTS OF END ITEM FOR DENTAL UNIT

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
1		Tray (51840) 043-003-00	EA	1
2	6520-00-138-2308	Handpiece, Dental, Low Speed (57078) 57506/3055	EA	1
3	6520-00-103-2858	Handpiece, Dental, High Speed w/Chip Blower (25692) 53874	EA	1

Section III. BASIC ISSUE ITEMS FOR DENTAL UNIT

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
1		Operation and Maintenance Instructions (51840) 85-0634-01	EA	2
2		Kit, Accessory (51840) 36-0089-00	KT	1
3		Operation and Maintenance Instructions (Syringes)	EA	2
4		Case, Carrying (51840) 36-0700-00	EA	1
5		Pad, Foam (51840) Not Available	EA	1

APPENDIX D

EXPENDABLE AND DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. Scope.

This appendix lists expendable and durable supplies and materials that are required to maintain the equipment. This listing is authorization to requisition and retain the items if not otherwise authorized.

D-2. Explanation of columns.

a. Item Number, Column 1. The item number (Item No.) is sequentially assigned.

b. Level, Column 2. This column identifies the lowest level of maintenance that requires the listed item. An explanation of the alphabetical character is provided in appendix B, section I of this manual.

c. National Stock Number, Column 3. This column indicates the national stock number assigned to the item.

d. Description, Column 4. This column indicates the federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the CAGE code in parentheses followed by the part number.

e. Unit of Measure, Column 5. This column indicates the unit of measure used in performing the actual operational or maintenance function. This measure is expressed by a two-character alphabetical abbreviation. These abbreviations are listed in the glossary.

f. Quantity, Column 6. This column indicates the quantity (QTY) of the item(s) to be used with or on the equipment.

Section II. EXPENDABLE AND DURABLE SUPPLIES AND MATERIALS LIST FOR DENTAL UNIT

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) UNIT OF MEASURE	(6) QTY
1	O	7920-01-004-7847	Cloth, Cleaning (97327) Rymple Cloth 301	RO	1
2	O	6520-01-169-0257	Lubricant, Silicone Spray (17925) 616SY0001	EA	1
3	O	6850-00-110-4498	Cleaning Compound (81348) PD680	PT	1
4	O	7920-00-543-7148	Brush, Dusting (81348) HB00190	EA	1
5	O	7930-00-926-5171	Polish, Stainless Steel (81348) P-C-1121	PT	1
6	O	8030-00-889-3534	Tape, Teflon, 3/10 in (81349) MIL-T-27730	RO	1
7	O	6505-00-655-8366	Alcohol, Isopropyl (1DZ38) Not Available	PT	1

APPENDIX E

REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

E-1. Scope.

This manual lists spare and repair parts, special tools, special test equipment; and other special support equipment required for the performance of unit level, direct support, general support, and depot level maintenance. It authorizes the requisitioning and issue of spare and repair parts in consonance with the MAC (app B).

E-2. General.

The Repair Parts and Special Tools List is divided into the following sections:

a. Repair Parts, Section II. A list of repair parts authorized for the performance of maintenance in figure number and item number sequence.

b. Special Tools, Test, and Support Equipment, Section III. A list of special tools, test, and support equipment authorized for the performance of maintenance.

E-3. Explanation of columns in section II.

a. Illustration, Column 1.

(1) *Figure Number.* This column indicates the figure number (Fig No.) of the illustration on which the item is shown.

(2) *Item Number.* This column indicates the item number (Item No.) used to identify each item on the illustration.

b. National Stock Number, Column 2. This column indicates the national stock number assigned to the item.

c. Description, Column 3. This column indicates the federal item name of the item. The last line for each item indicates the CAGE code in parentheses followed by the part number.

d. Unit of Measure, Column 4. This column indicates the unit of measure used in performing the actual operational or maintenance function. This measure is expressed by a two-character alphabetical abbreviation.

e. Quantity, Column 5. This column indicates the quantity (QTY) of the item(s) to be used with or on the illustrated component, assembly, module, or end item. The abbreviation "AR" indicates "as required."

E-4. Explanation of columns in section III.

a. Item Number, Column 1. This number is sequentially assigned.

b. Level, Column 2. This column identifies the lowest level of maintenance that requires the listed item. An explanation of the alphabetical character is provided in appendix B, section I of this manual.

c. National Stock Number, Column 3. This column indicates the national stock number assigned to the item.

d. Description, Column 4. This column indicates the federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the CAGE code in parentheses followed by the part number.

e. Unit of Measure, Column 5. This column indicates the unit of measure used in performing the actual operational or maintenance function. This measure is expressed by a two-character alphabetical abbreviation.

f. Quantity, Column 6. This column indicates the quantity (QTY) of the item(s) to be used with or on the equipment.

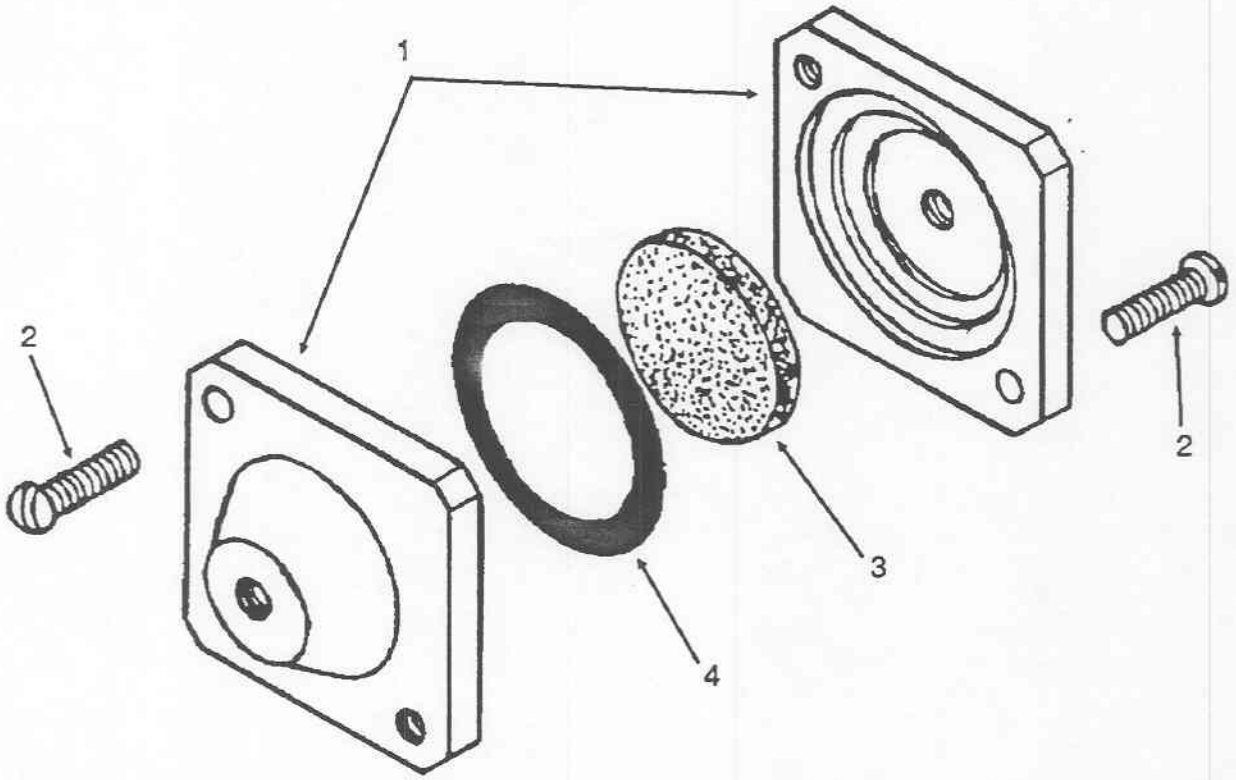

Figure E-1. Water filter.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-1	1		Housing (51840) 19-0110-00	EA	2
E-1	2		Screw, 4-40 by 1/4 in, Zinc Plated (51840) 001-047-00	EA	2
E-1	3	6520-01-295-7504	Filter, Disk (51840) 19-0220-00	EA	1
E-1	4	5330-01-297-4158	Packing, Preformed (51840) 030-016-00	EA	1

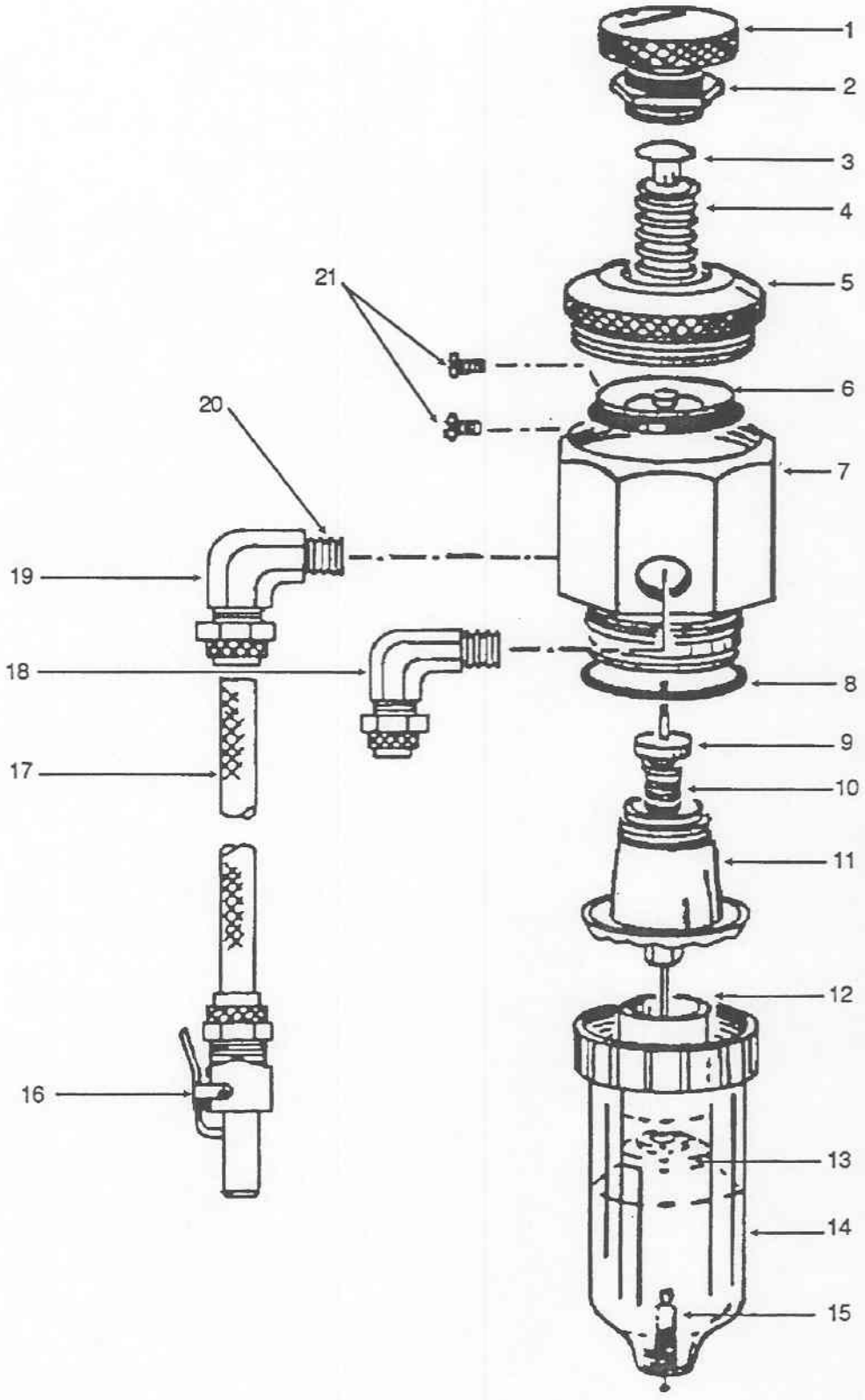

Figure E-2. Air filter and regulator.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-2	1		Screw, Adjusting (51840) Not Available	EA	1
E-2	2		Locknut (51840) 006-006-00	EA	1
E-2	3		Spring Cap (51840) Not Available	EA	1
E-2	4		Spring, Compression (51840) Not Available	EA	1
E-2	5		Cover (51840) Not Available	EA	1
E-2	6		Diaphragm Assembly (51840) 97-0200-00	EA	1
E-2	7		Body, Valve (51840) Not Available	EA	1
E-2	8	5330-01-295-3215	Packing, Preformed (51840) 030-023-00	EA	1
E-2	9		Poppet (51840) 97-0240-00	EA	1
E-2	10		Spring, Compression (51840) Not Available	EA	1
E-2	11		Assembly, Inlet Seat (51840) Not Available	EA	1
E-2	12	4310-01-295-3244	Filter Element, Intake Air Cleaner (51840) 97-0280-00	EA	1
E-2	13		Filter Element, Retainer (51840) Not Available	EA	1
E-2	14		Bowl, Sediment (51840) 97-0290-00	EA	1
E-2	15		Valve Core, Dental (51840) 026-033-00	EA	1
E-2	16		Quick-disconnect, Male, 3/8 in od (51840) 026-040-00	EA	1
E-2	17		Tubing, Braided, 3/8 in od (51840) 024-088-00	EA	1
E-2	18		Elbow, 1/4 in by 1/8 in mpt (51840) 022-003-00	EA	1

Section II. REPAIR PARTS LIST
FOR
DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-2	19		Elbow, 3/8 in by 1/8 in mpt (51840) 022-025-00	EA	1
E-2	20		Plug, 1/8 in mpt, Socket Head, Brass (51840) 021-020-00	EA	1
E-2	21		Screw, Button Head, 6-32 by 1/4 in (51840) 001-012-00	EA	2
E-2	*	6520-01-300-4550	Service Kit, Air Filter/Regulator (51840) 90-0030-00	KT	AR
E-2	**		Air Filter/Regulator (51840) 026-041-00	EA	1

* Includes items 6, 9, 12, and 15.

** Includes items 1 through 15 and item 21.

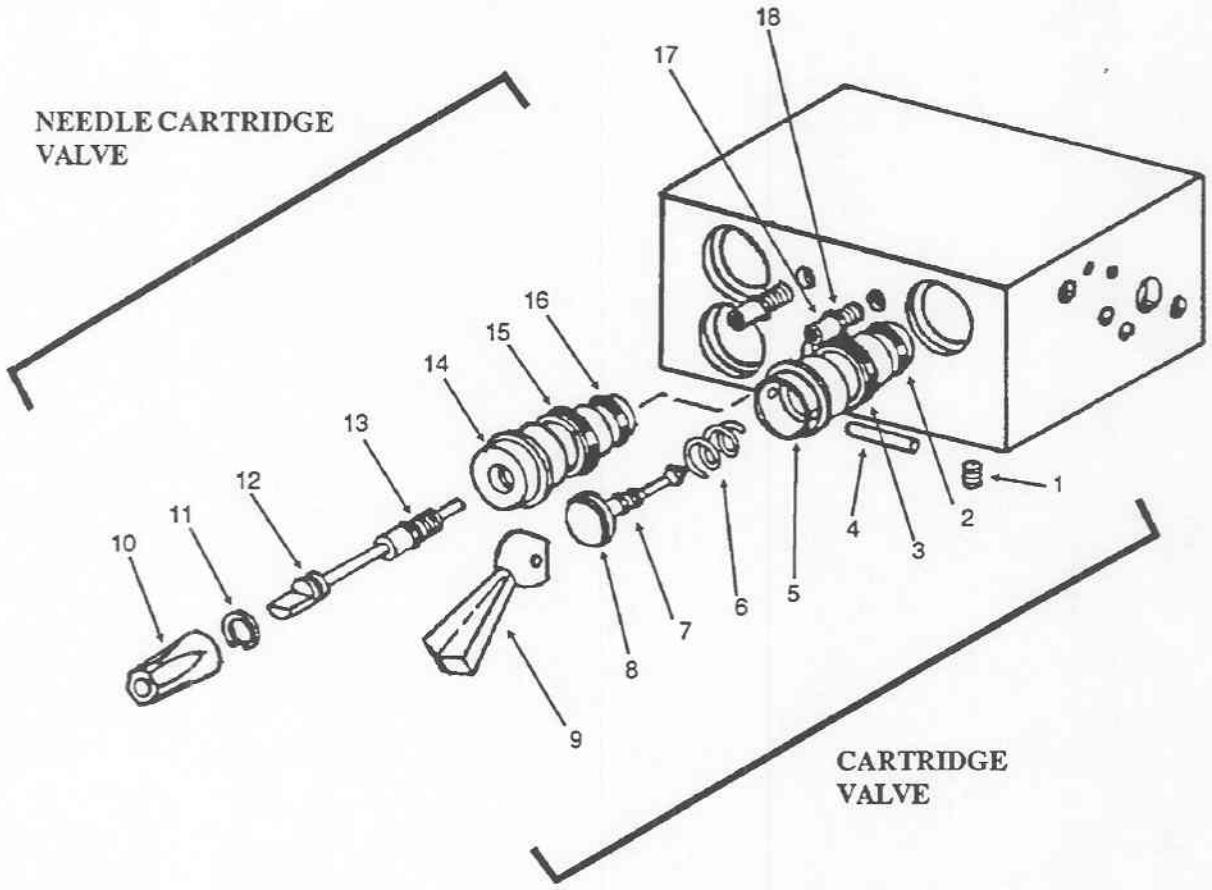

Figure E-3. Master block assembly.

Section II. REPAIR PARTS LIST
FOR
DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-3	1		Set Screw, Socket, 6-32 by 1/8 in, Cup Point, Stainless (51840) 007-001-00	EA	1
E-3	2		Packing, Preformed (51840) 030-008-00	EA	1
E-3	3		Packing, Preformed (51840) 030-010-00	EA	1
E-3	4	5315-01-297-4198	Pin, Straight, Headless (51840) 011-039-00	EA	1
E-3	5		Body, Valve (51840) 33-0099-00	EA	1
E-3	6	5360-01-246-1988	Spring, Compression (51840) 22-0040-00	EA	1
E-3	7		Packing, Preformed (51840) 030-001-00	EA	1
E-3	8	4820-01-247-4962	Stem, Cartridge Valve (51840) 29-0840-00	EA	1
E-3	9		Toggle, Plastic (51840) 22-0462-00	EA	1
E-3	10		Knob (51840) 027-018-00	EA	1
E-3	11		Ring, Retaining, Internal (51840) 010-017-00	EA	1
E-3	12		Stem, Cartridge, Needle Valve (51840) 33-0103-00	EA	1
E-3	13		Packing, Preformed (51840) 030-004-00	EA	1
E-3	14		Body, Valve (51840) 33-0102-00	EA	1
E-3	15		Packing, Preformed (51840) 030-010-00	EA	1
E-3	16		Packing, Preformed (51840) 030-008-00	EA	1
E-3	17		Screw, Adjusting (51840) 29-0100-00	EA	1

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-3	18		Packing, Preformed (51840) 030-004-00	EA	1
E-3	*	6520-01-296-7429	Service Kit, Cartridge, Needle Valve (51840) 90-0308-00	KT	AR
E-3	**		Master Block (51840) 38-0185-00	EA	AR
E-3	***		Valve, Needle Cartridge (51840) 33-0101-00	EA	AR
E-3	****		Valve, Cartridge (51840) 33-0100-00	EA	AR

* Includes items 2, 3, 11, 13, 15, 16, and 18.

** Includes items 1 through 18.

*** Includes items 10 through 16.

**** Includes items 2 through 9.

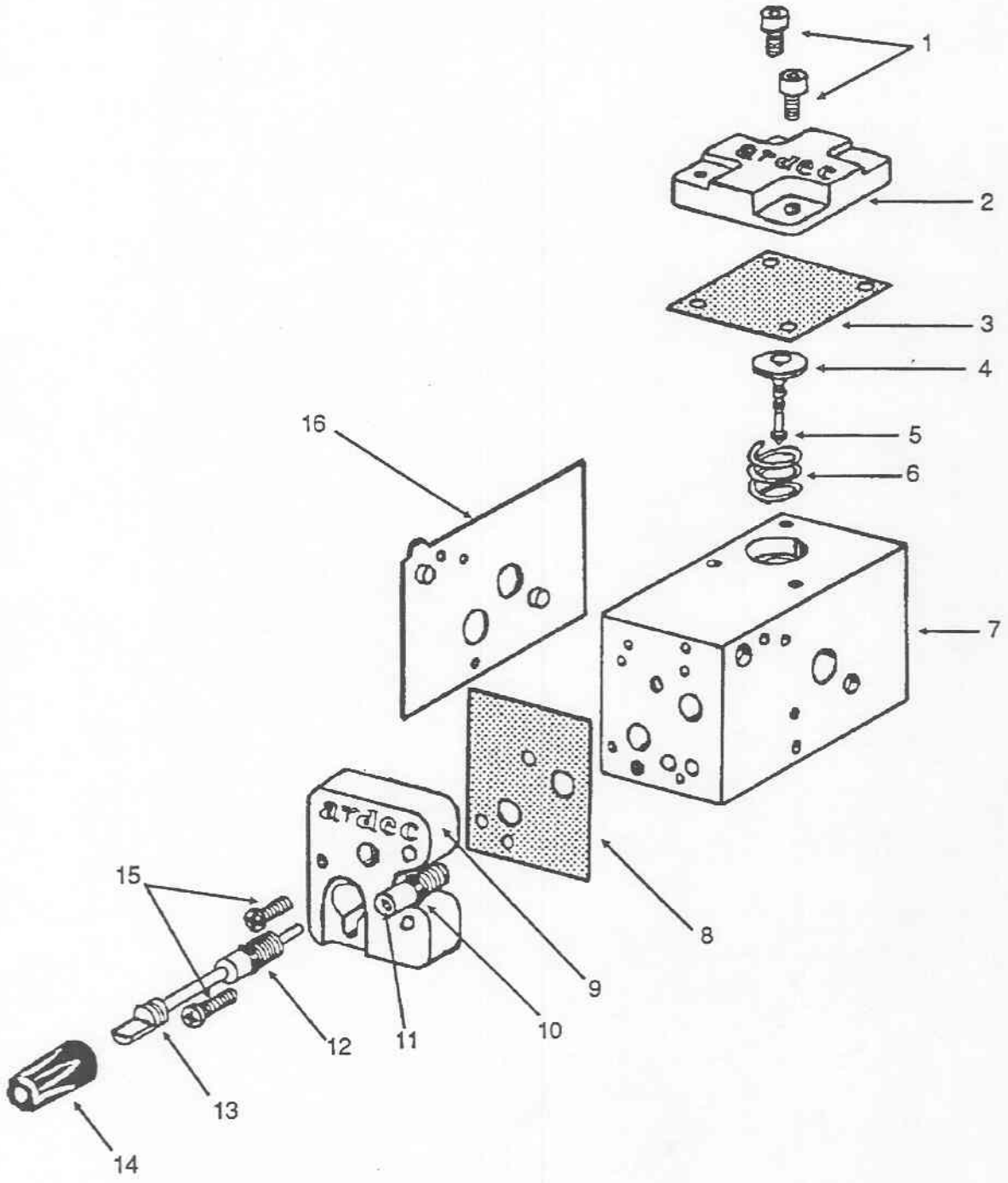

Figure E-4. Control block assembly.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION FIG NO.	(1) ILLUSTRATION ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
E-4	1		Screw, Socket Head, 4-40 by 1/4 in (51840) 002-092-00	EA	2
E-4	2		Cap, Water Valve (51840) 38-0181-00	EA	1
E-4	3		Diaphragm (51840) 38-0054-00	EA	1
E-4	4		Stem, Control Block (51840) 29-0835-00	EA	1
E-4	5		Packing, Preformed (51840) 030-001-00	EA	1
E-4	6		Spring (51840) 013-025-00	EA	1
E-4	7		Control Block (51840) 38-0176-00	EA	1
E-4	8		Diaphragm, Control Block (51840) 38-0179-00	EA	1
E-4	9		Cover, Front (51840) 38-0178-00	EA	1
E-4	10		Packing, Preformed (51840) 030-004-00	EA	1
E-4	11		Screw, Adjusting (51840) 29-0100-00	EA	1
E-4	12		Packing, Preformed (51840) 030-004-00	EA	1
E-4	13		Stem, Needle Valve (51840) 33-0103-00	EA	1
E-4	14		Knob (51840) 027-017-00	EA	1
E-4	15		Screw, Phillips, 4-40 by 1/4 in (51840) 002-097-00	EA	2
E-4	16		Gasket (51840) 38-0186-00	EA	1
E-4	*	6520-01-296-7429	Service Kit, Master Block (51840) 90-0308-00	EA	AR
	* Includes items 3, 4, 5, 8, 10, 12, and 16.				

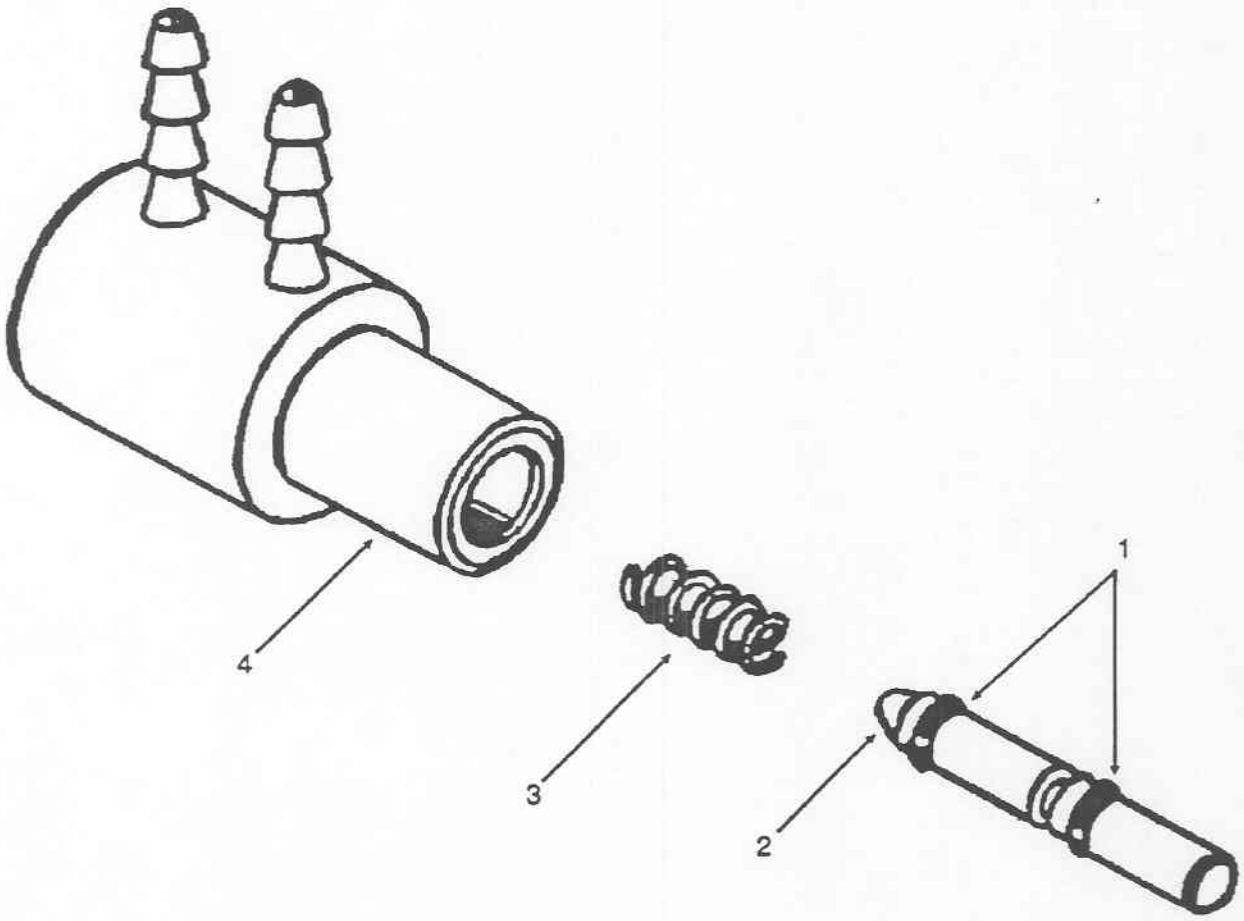

Figure E-5. Microvalve.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-5	1		Packing, Preformed (51840) 030-001-00	EA	2
E-5	2		Stem, Needle Valve (51840) 29-0820-00	EA	1
E-5	3		Spring, Helical Compression (51840) 10-0440-00	EA	1
E-5	4		Body, Microvalve (51840) 29-0190-00	EA	1

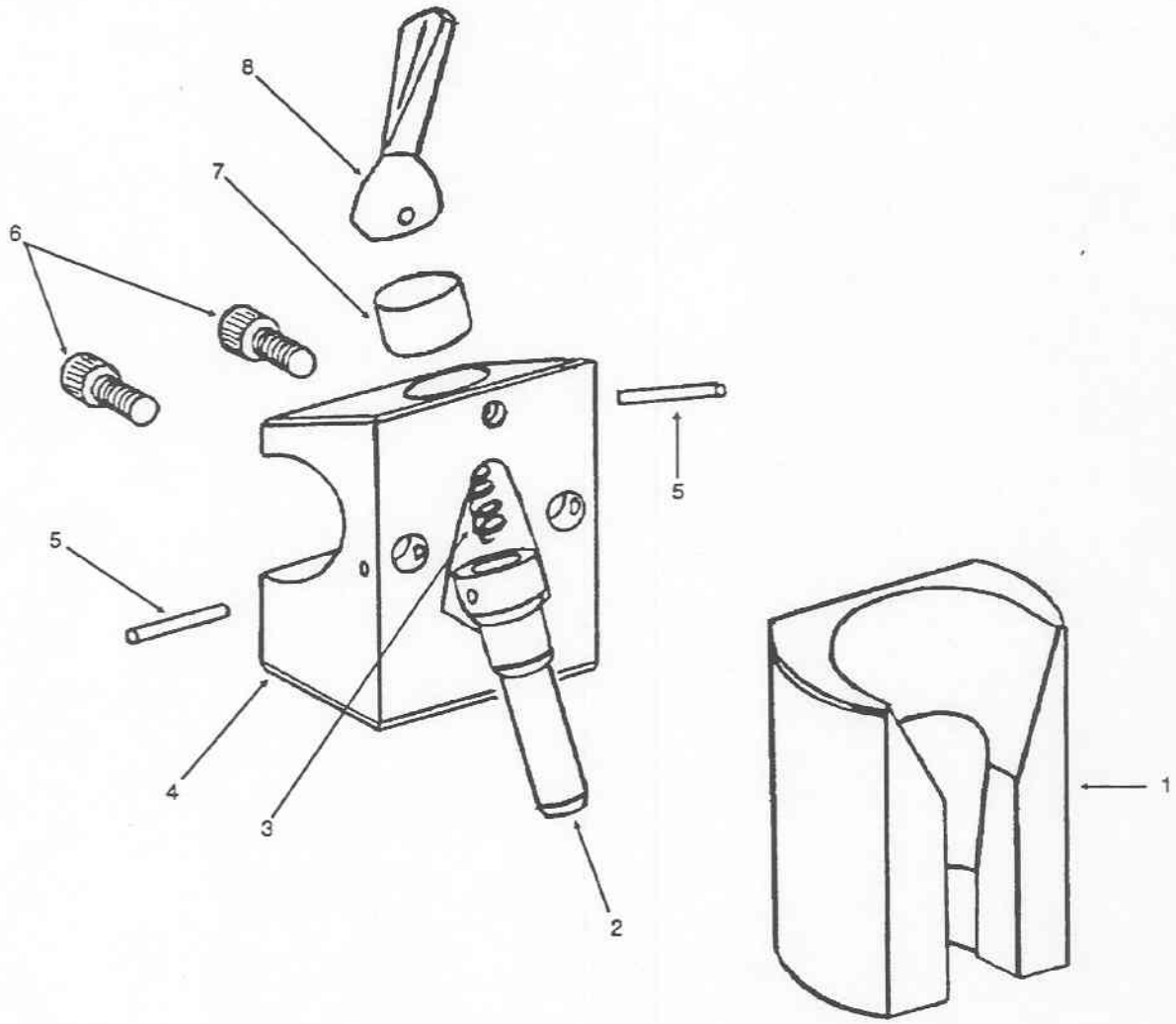

Figure E-6. Automatic holder.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-6	1		Holder, Automatic Block (51840) 99-0541-00	EA	1
E-6	2		Actuator, Automatic Holder (51840) 40-0667-00	EA	1
E-6	3		Spring, Helical Compression (51840) 40-0182-00	EA	1
E-6	4		Clamp, Automatic Holder (51840) 40-0710-00	EA	1
E-6	5		Pin, Dowel, 1/16 in od by 0.52 in (51840) 011-041-00	EA	2
E-6	6		Screw, Knurled, 10-32 by 1/2 in (51840) 001-003-00	EA	2
E-6	7		Spacer (51840) 40-0665-00	EA	1
E-6	8		Lever, Lock-Release (51840) 22-0462-00	EA	1

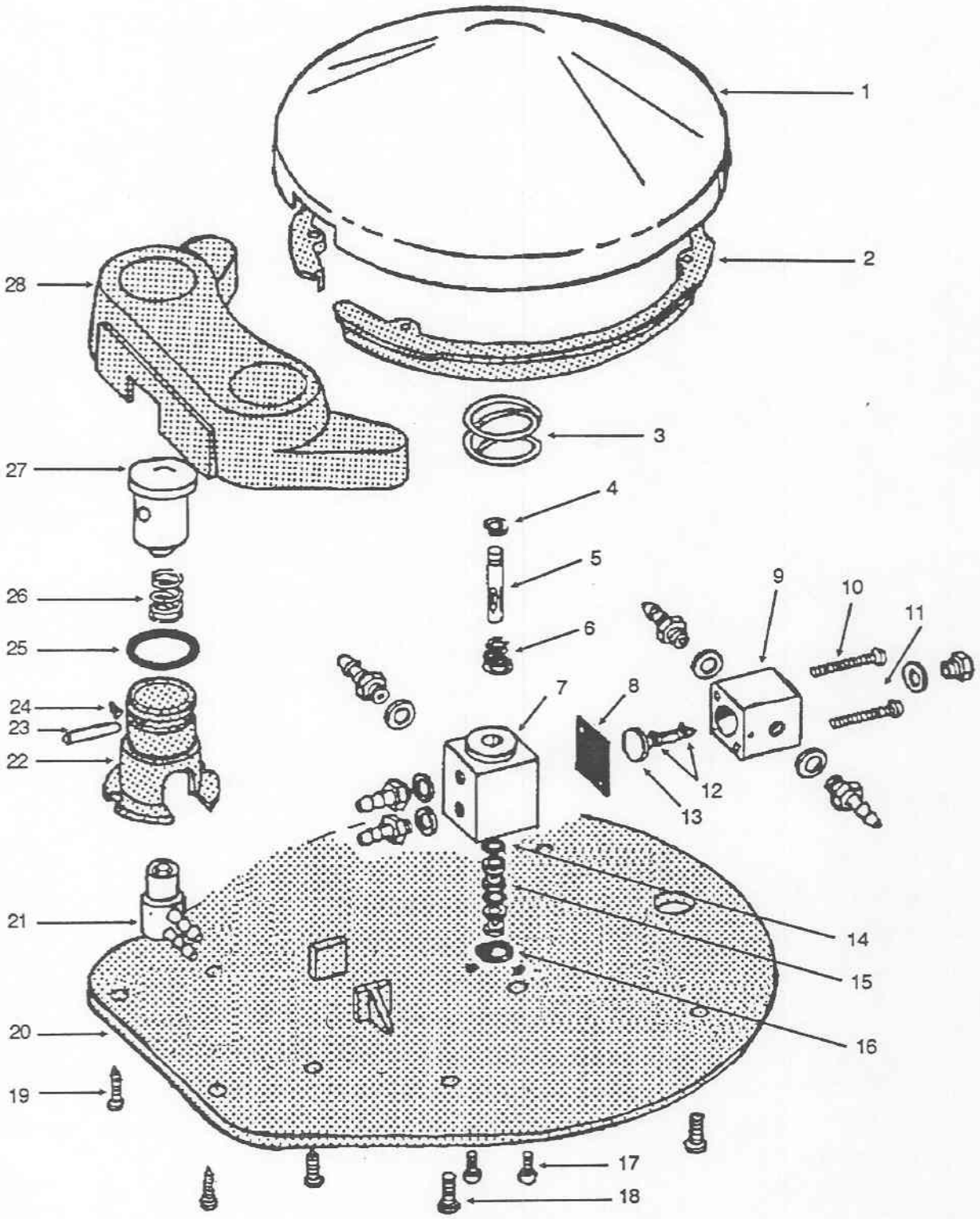

Figure E-7. Foot control valve with chip blower valve.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-7	1		Cover (51840) 22-0110-00	EA	1
E-7	2		Ring, Retainer (51840) 38-0237-00	EA	1
E-7	3		Spring, Helical Compression (51840) 013-011-00	EA	1
E-7	4		Ring, Retaining, External (51840) 010-002-00	EA	1
E-7	5		Stem, Valve (51840) 38-0246-00	EA	1
E-7	6		Spring, Helical Compression (51840) 013-022-00	EA	1
E-7	7		Body, Valve (51840) 38-0241-00	EA	1
E-7	8		Diaphragm, Valve, Flat (51840) 38-0054-00	EA	1
E-7	9		Body, Valve, Relay (51840) 38-0056-00	EA	1
E-7	10		Screw, Phillips, 4-40 by 7/8 in (51840) 002-016-00	EA	2
E-7	11		Spring, Helical Compression (51840) 10-0440-00	EA	1
E-7	12		Packing, Preformed (51840) 030-001-00	EA	2
E-7	13		Stem, Relay, Foot Control (51840) 22-0778-00	EA	1
E-7	14		Packing, Preformed (51840) 035-019-00	EA	1
E-7	15		Spacer (51840) 38-0213-00	EA	1
E-7	16		Packing, Preformed (51840) 030-012-00	EA	1
E-7	17		Screw, Socket Head, 4-40 by 1/4 in (51840) 002-092-00	EA	2
E-7	18		Screw, Sheet Metal, Phillips, 6 by 1/2 in (51840) 003-022-00	EA	4

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION FIG NO.	(1) ILLUSTRATION ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
E-7	19		Screw, Sheet Metal, Phillips, 4 by 1/2 in (51840) 003-031-00	EA	4
E-7	20		Base (51840) 38-0055-00	EA	1
E-7	21		Microvalve (51840) 38-0062-00	EA	1
E-7	22		Pedestal (51840) 38-0072-00	EA	1
E-7	23		Pin, Dowel (51840) 011-016-00	EA	1
E-7	24		Set Screw, Socket, 6-32 by 3/16 in (51840) 007-002-00	EA	1
E-7	25	5330-01-297-4157	Packing, Preformed (51840) 035-005-00	EA	1
E-7	26		Spring, Helical Compression (51840) 22-0040-00	EA	1
E-7	27		Button (51840) 38-0070-00	EA	1
E-7	28		Housing, Plastic, Two Holes (51840) 38-0046-00	EA	1
E-7	*		Bumper, Self-adhesive (51840) 017-007-00	EA	9
E-7	**	6520-01-296-7427	Service Kit, Foot Control (51840) 90-0312-00	KT	AR
E-7	***		Valve, Chip Blower (51840) 38-0078-00	EA	AR

* Indicates parts that are not shown in the illustration.

** Includes items 3, 5, 6, 8, 11, 12, 14, and 16.

*** Includes items 21 through 27.

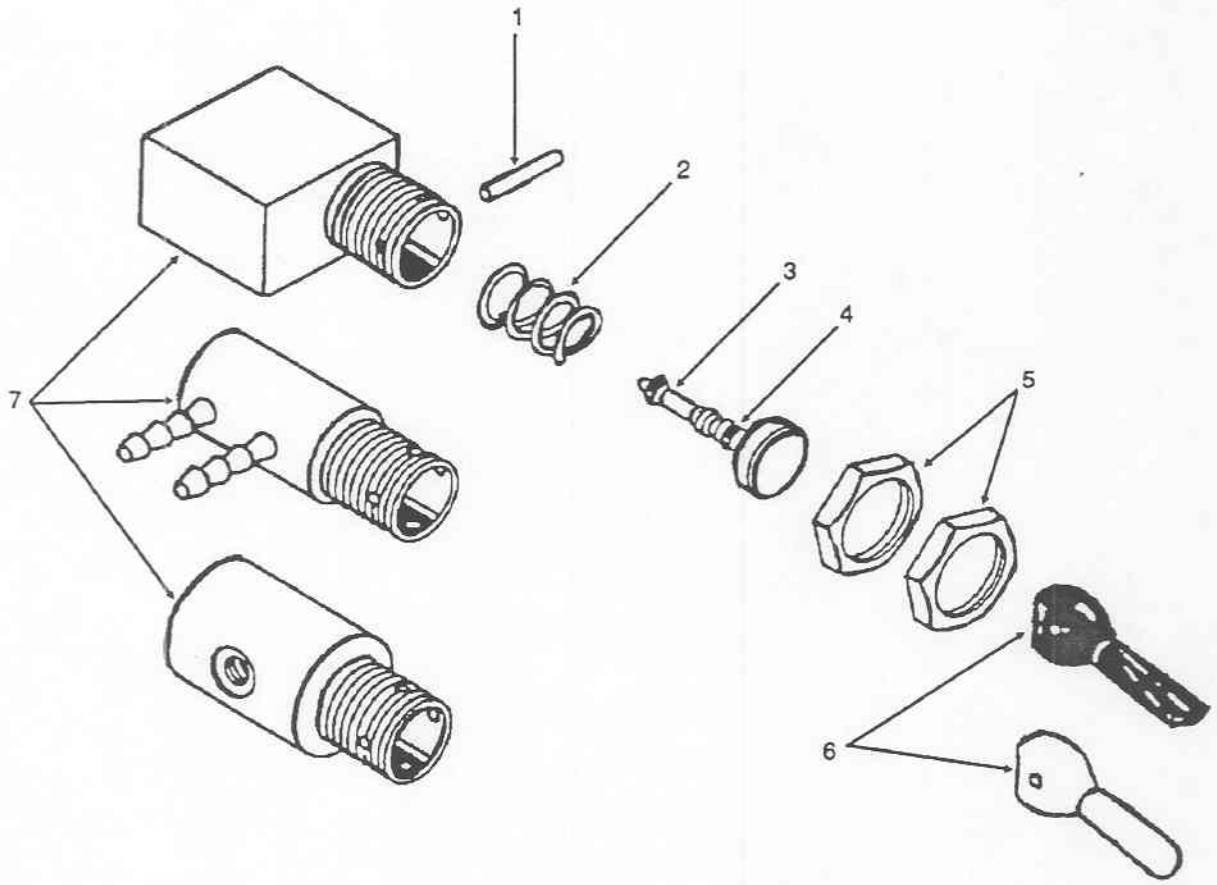

Figure E-8. Toggle valve.

Section II. REPAIR PARTS LIST
FOR
DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-8	1	5315-01-295-7196	Pin, Straight, Headless (51840) 011-038-00	EA	1
E-8	2		Spring, Helical Compression (51840) 22-0040-00	EA	1
E-8	3		Stem, Needle Valve (51840) 29-0840-00	EA	1
E-8	4		Packing, Preformed (51840) 030-001-00	EA	2
E-8	5		Nut, 15/32 by 3/32 in, 9/16 in Hex (51840) 006-009-00	EA	2
E-8	6		Toggle, Plastic (51840) 22-0462-00	EA	1
			OR		
			Toggle, Metal (51840) 22-0470-00	EA	1
E-8	7		Body, Valve (51840) 33-0006-00	EA	1
			OR		
			Body, Valve (51840) 33-0050-00	EA	1
			OR		
			Body, Valve (51840) 33-0078-00	EA	1

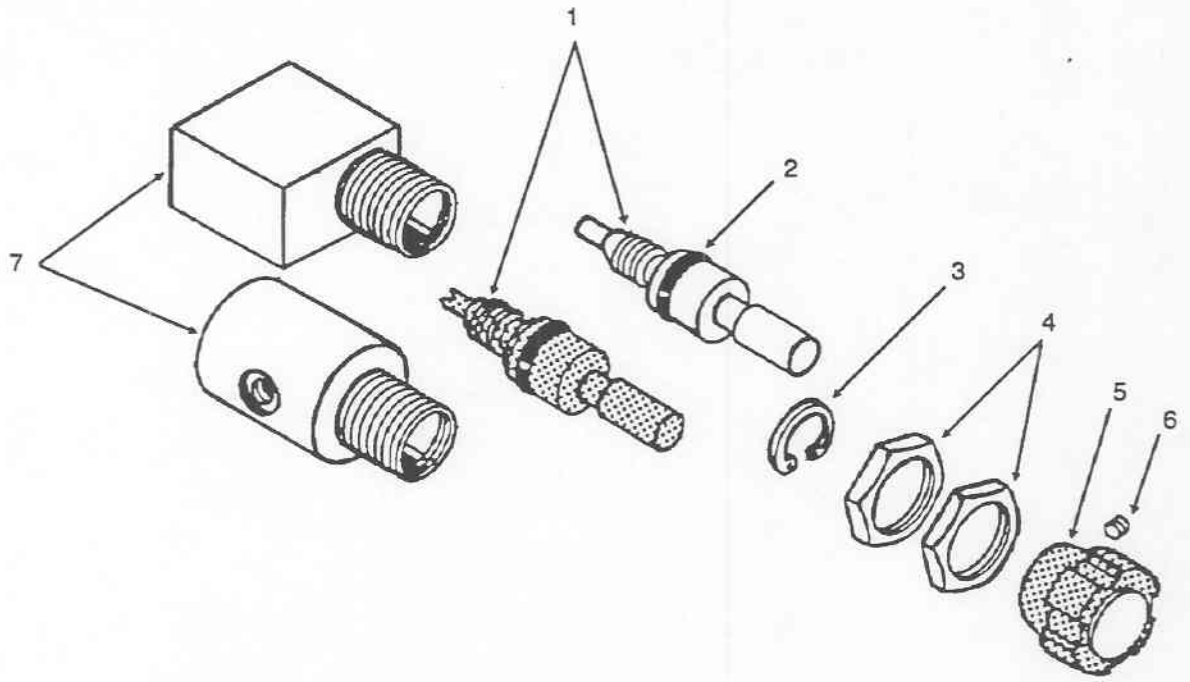

Figure E-9. Needle valve.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-9	1		Stem, Needle Valve, Black (51840) 38-0102-00	EA	1
			OR		
			Stem, Needle Valve, White (51840) 33-0094-00	EA	1
E-9	2		Packing, Preformed (51840) 030-010-00	EA	1
E-9	3		Ring, Retaining, Internal (51840) 010-013-00	EA	1
E-9	4		Nut, 15/32 by 3/32 in, 9/16 in Hex, Chrome Plated (51840) 006-009-00	EA	2
E-9	5	5355-01-295-7190	Knob (51840) 027-008-00	EA	1
E-9	6		Set Screw, Socket, 6-32 by 1/8 in, Cup Point, Black Oxide (51840) 007-016-00	EA	1
E-9	7		Body, Valve (51840) 33-0086-00	EA	1
			OR		
			Body, Valve (51840) 13-0353-00	EA	1

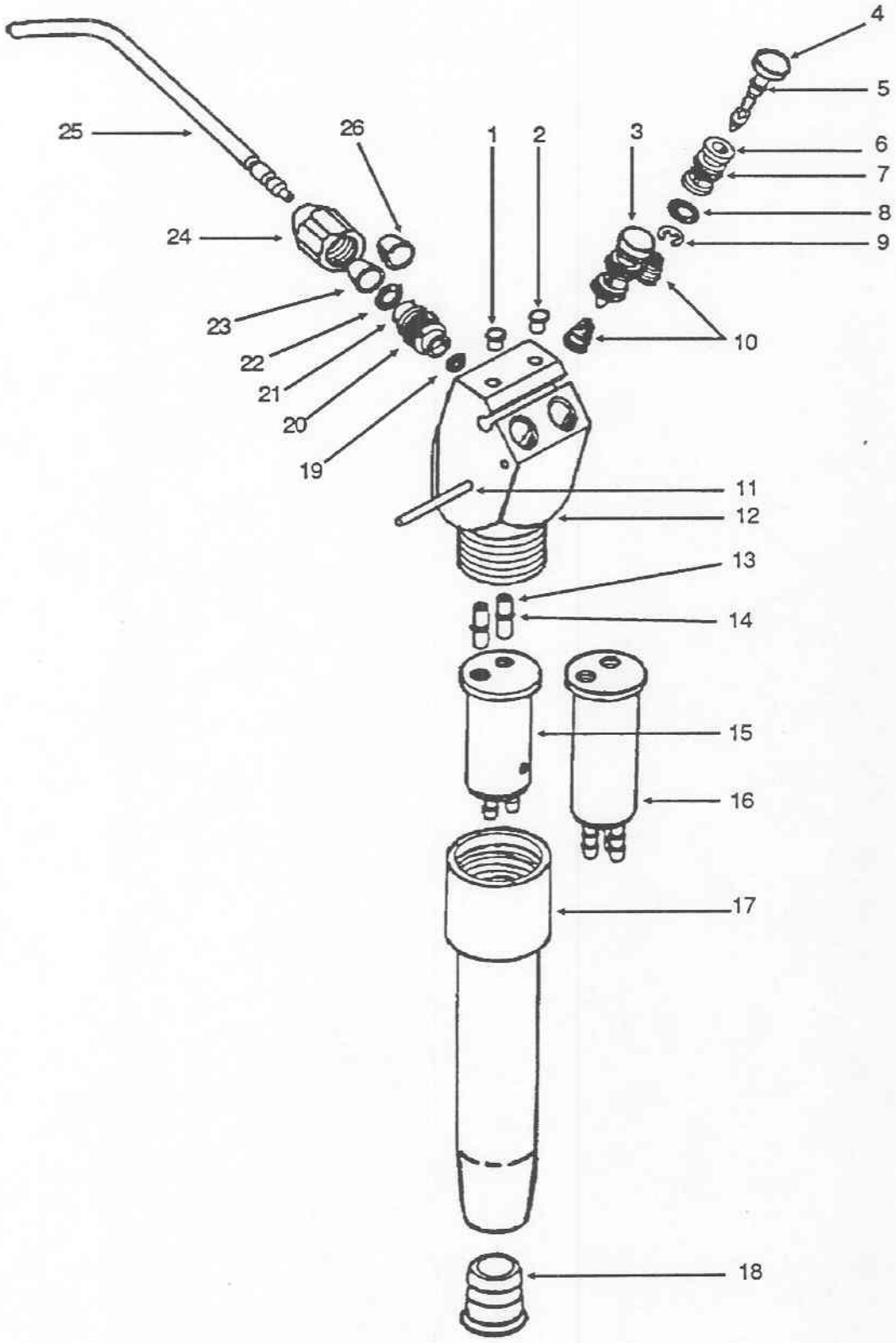

Figure E-10. Syringe.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-10	1		Identifier, Blue (51840) 40-0691-00	EA	1
E-10	2		Identifier, Yellow (51840) 40-0689-00	EA	1
E-10	3	6520-01-296-7425	Button Assembly (51840) 23-0040-00 (Includes items 4 through 9)	EA	1
E-10	4		Button Stem (51840) 23-0025-00	EA	2
E-10	5		Packing, Preformed (51840) 035-010-00	EA	2
E-10	6		Spool, Brass (51840) 23-0024-00	EA	1
E-10	7		Packing, Preformed (51840) 035-012-00	EA	2
E-10	8		Packing, Preformed (51840) 033-006-00	EA	2
E-10	9		Ring, Retaining (51840) 010-019-00	EA	2
E-10	10		Spring, Conical Compression (51840) 013-038-00	EA	2
E-10	11		Pin, Dowel (51840) 011-029-00	EA	1
E-10	12		Body, Syringe (51840) 23-0093-00	EA	1
E-10	13	6515-01-296-5761	Connector, Tubing, Straight (51840) 23-0758-00	EA	2
E-10	14		Packing, Preformed (51840) 030-004-00	EA	2
E-10	15		Terminal, Non-circulating (51840) 23-0760-00	EA	1
E-10	16		Terminal, Circulating (51840) 23-0782-00	EA	1
E-10	17		Handle, Syringe (51840) 23-0757-00	EA	1

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-10	18		Bushing, Handle (51840) 23-0768-00	EA	1
E-10	19		Packing, Preformed (51840) 033-003-00	EA	1
E-10	20		Packing, Preformed (51840) 035-020-00	EA	1
E-10	21		Insert, Tip Adapter (51840) 23-0878-00	EA	1
E-10	22		Packing, Preformed (51840) 033-006-00	EA	1
E-10	23		Sleeve, Swivel, Metal (51840) 23-0886-00	EA	1
E-10	24		Nut, Syringe (51840) 23-0875-00	EA	1
E-10	25	6520-01-114-9988	Nozzle (51840) 23-0872-00	EA	1
E-10	26		Sleeve, Non-swivel (51840) 23-0887-00	EA	1
E-10	*	6520-01-296-7426	Service Kit, Syringe (51840) 90-0317-00	KT	AR
E-10	**		Service Kit, Button (51840) 90-309-00	KT	AR
E-10	***		Assembly, Syringe Head (51840) 23-0094-00	EA	AR

* Includes items 5, 7, 8, 9, 10, 19, and 20.

** Includes items 5, 7, 8, and 9.

*** Includes items 1 through 12 and 19 through 26.

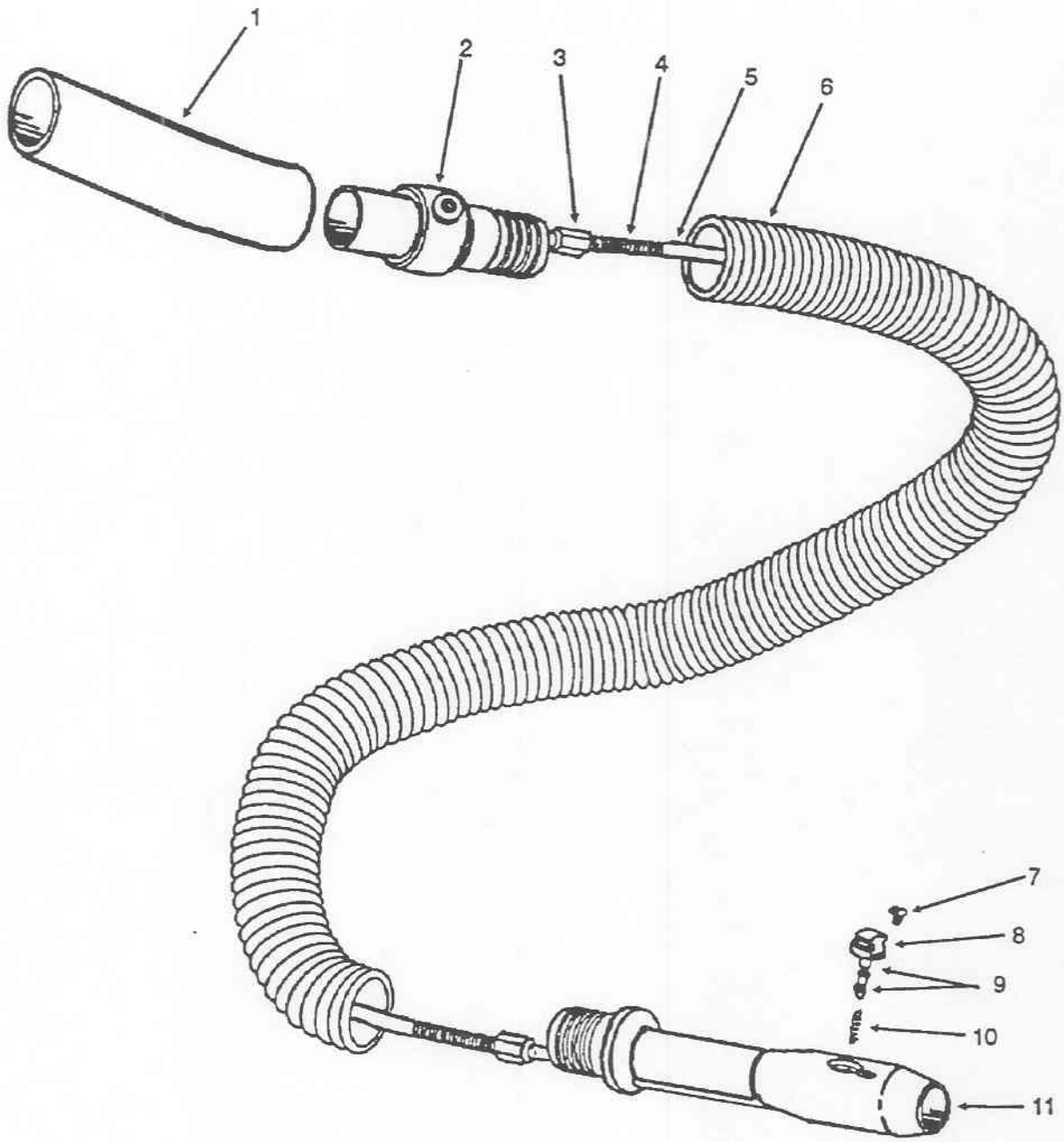

Figure E-11. AVS handpiece assembly.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION FIG NO.	(1) ILLUSTRATION ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
E-11	1		Tubing, Gray, 3/4 in od (51840) 024-004-00	EA	1
E-11	2		Assembly, Tubing Adapter (51840) 10-0170-00	EA	1
E-11	3		Nut, Special (51840) 10-0120-00	EA	1
E-11	4		Spring, Strain Relief (51840) 013-009-00	EA	1
E-11	5		Tubing, 0.145 in od (51840) 024-003-00	EA	1
E-11	6		Tubing, Convolute, 5/8 in id (51840) 024-093-00	EA	1
E-11	7		Screw, Trusshead, Slotted, 2-56 by 1/8 in (51840) 001-002-00	EA	1
E-11	8		Button, Locking (51840) 10-0110-00	EA	1
E-11	9		Packing, Preformed (51840) 030-001-00	EA	2
E-11	10		Spring, Helical Compression (51840) 10-0440-00	EA	1
E-11	11		AVS Handpiece Body (51840) Not Availabie	EA	1
E-11	*		Handpiece, AVS Assembly (51840) 10-0700-00	EA	AR
E-11	**		AVS Button Kit (51840) 10-0600-00	KT	AR
E-11	***	4720-01-297-8658	AVS Tubing Assembly (51840) 024-039-00	EA	AR

* Includes items 7 through 10.

** Includes items 8 through 10.

*** Includes items 3 through 6.

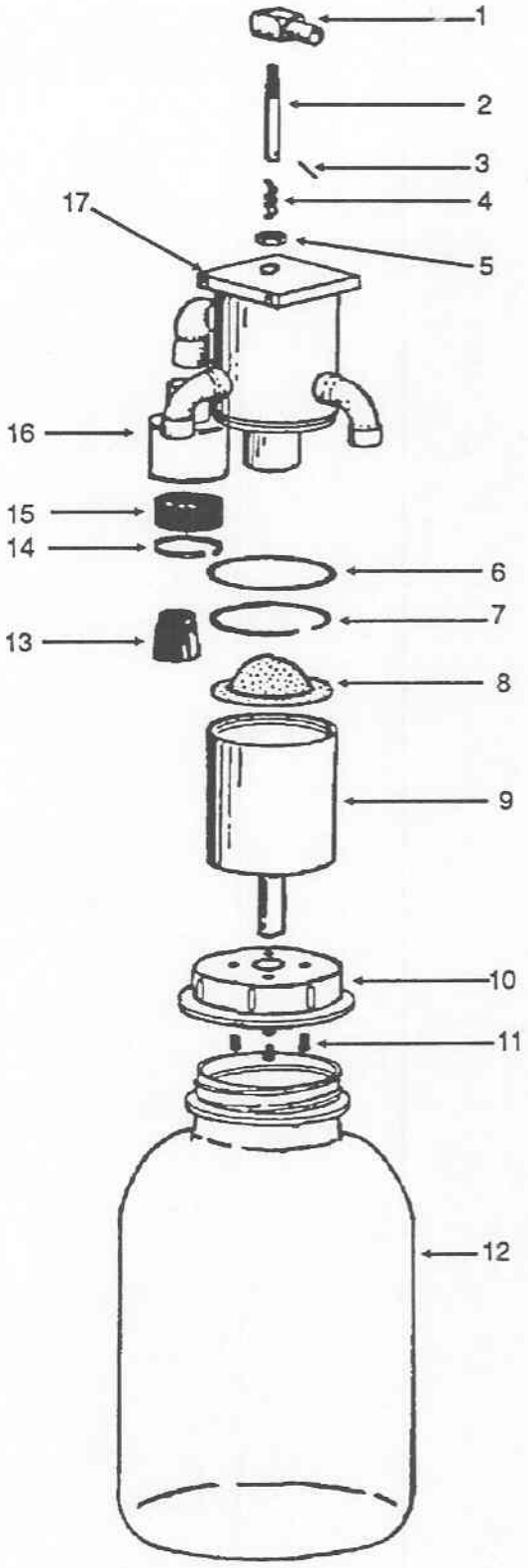

Figure E-12. Air vacuum system.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-12	1		Elbow, Saliva Ejector Drain (51840) 12-0440-00	EA	1
E-12	2		Tube, Drain (51840) 12-0350-00	EA	1
E-12	3		Pin, Roll (51840) 011-003-00	EA	1
E-12	4		Baffle, Spiral (51840) 12-0380-00	EA	1
E-12	5		Nut, Hex, Nylon, 1/2-20 by 7/16 in (51840) 12-0390-00	EA	1
E-12	6		Packing, Preformed (51840) 030-018-00	EA	1
E-12	7		Ring, Retaining, Internal (51840) 010-0390-00	EA	1
E-12	8	4510-00-393-3728	Strainer, Waste (51840) 10-0310-00	EA	1
E-12	9		Lower Body (51840) 17-0290-00	EA	1
E-12	10		Lid, AVS Waste Container (51840) 17-0320-00	EA	1
E-12	11		Screw, Slotted, 10-32 by 1/4 in (51840) 001-048-00	EA	4
E-12	12		Jar, Cylinder (51840) 14-0010-00	EA	1
E-12	13		Stopper, Rubber (51840) 028-002-00	EA	1
E-12	14		Ring, Retaining, Internal (51840) 010-001-00	EA	1
E-12	15	4310-01-297-8696	Filter Element (51840) 10-0540-00	EA	1
E-12	16		Housing, Muffler (51840) 10-0530-00	EA	1
E-12	17		Upper Body (51840) 10-0430-00	EA	1
E-12	*		Lower Body Assembly, AVS (51840) 17-0280-00	EA	AR

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-12	**		Waste Container Assembly, AVS (51840) 17-0270-00	EA	1

* Includes items 7 through 11 and item 13.

** Includes items 7 through 13.

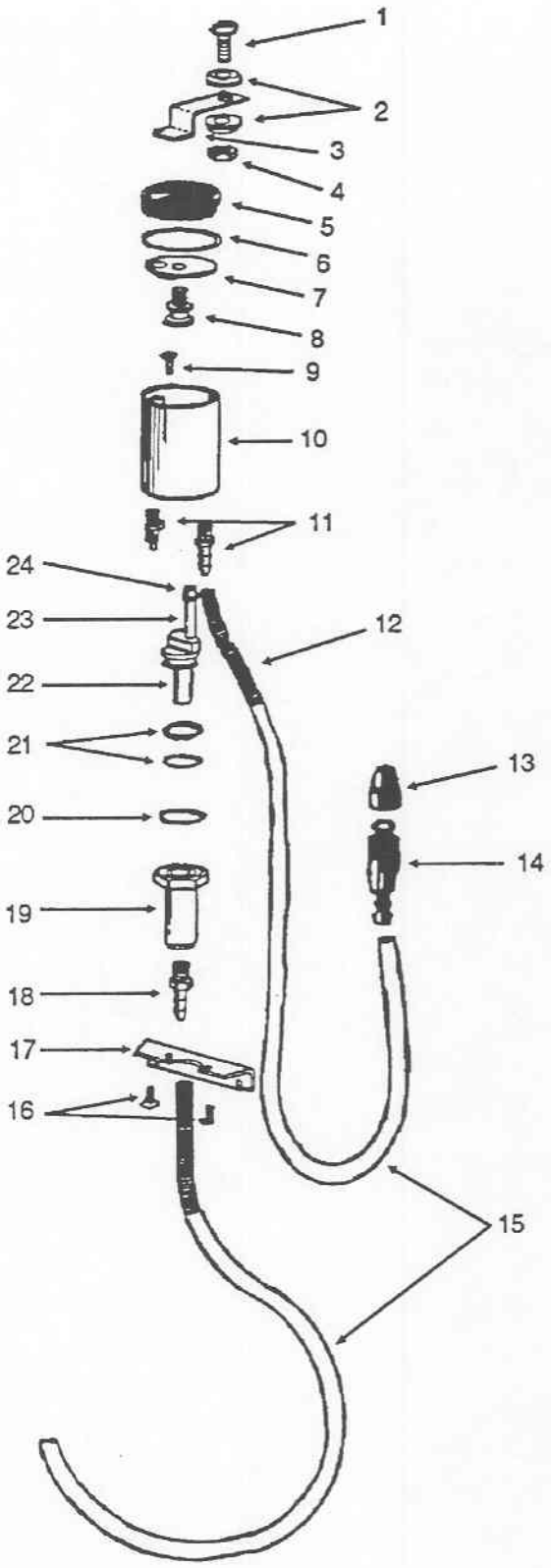

Figure E-13. Air saliva ejector.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-13	1		Screw, Slotted, 6-32 by 3/8 in (51840) 001-054-00	EA	1
E-13	2		Washer, Shoulder, Nylon (51840) 004-020-00	EA	2
E-13	3		Bracket, ASE Cover Holder (51840) 36-0051-00	EA	1
E-13	4		Nut, Hex, 6-32 by 1/4 in (51840) 006-012-00	EA	1
E-13	5		Cap, ASE (51840) 12-0140-00	EA	1
E-13	6	5330-01-297-8635	Packing, Preformed (51840) 030-031-00	EA	1
E-13	7	6520-01-297-1677	Screen (51840) 12-0090-00	EA	1
E-13	8	5305-01-297-8631	Thumbscrew, 6-32 by 1/4 in (51840) 001-011-00	EA	1
E-13	9		Screw, Slotted, 6-32 by 1/8 in (51840) 001-032-00	EA	1
E-13	10		Body, ASE (51840) 12-0100-00	EA	1
E-13	11		Adapter, 1/8 in mpt by 1/4 in od Tubing (51840) 022-001-00	EA	2
E-13	12		Spring, Strain Relief (51840) 36-0082-00	EA	2
E-13	13		Tip, Saliva Ejector (51840) 12-0183-00	EA	1
E-13	14		Body (51840) 12-0184-00	EA	1
E-13	15	6520-00-089-4087	Tubing, Ejector, Saliva (51840) 024-008-00	FT	8
E-13	16		Screw, Slotted, 6-32 by 1/4 in (51840) 001-012-00	EA	2
E-13	17		Mounting Bracket (51840) 12-0280-00	EA	1
E-13	18		Barb, 1/8 in mpt by 1/4 in (51840) 023-003-00	EA	1

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-13	19		Drain Pipe (51840) 12-0160-00	EA	1
E-13	20	5330-01-297-8645	Packing, Preformed (51840) 030-014-00	EA	1
E-13	21	5330-01-297-8634	Packing, Preformed (51840) 030-012-00	EA	2
E-13	22		Venturi (51840) 12-0462-00	EA	1
E-13	23		Tube, Threaded (51840) 12-0030-00	EA	1
E-13	24		Ring, Retaining, External (51840) 010-002-00	EA	1
E-13	*		Cap Assembly (51840) 12-0150-00	EA	AR
E-13	**		Jet Assembly (51840) 12-0010-00	EA	AR
E-13	***		ASE Assembly (51840) 12-0070-00	EA	AR
E-13	****		Saliva Ejector Tip Assembly (51840) 12-0200-00	EA	AR

* Includes items 5 through 8.

** Includes items 21 through 24.

*** Includes items 5 through 11 and 16 through 24.

**** Includes items 13 and 14.

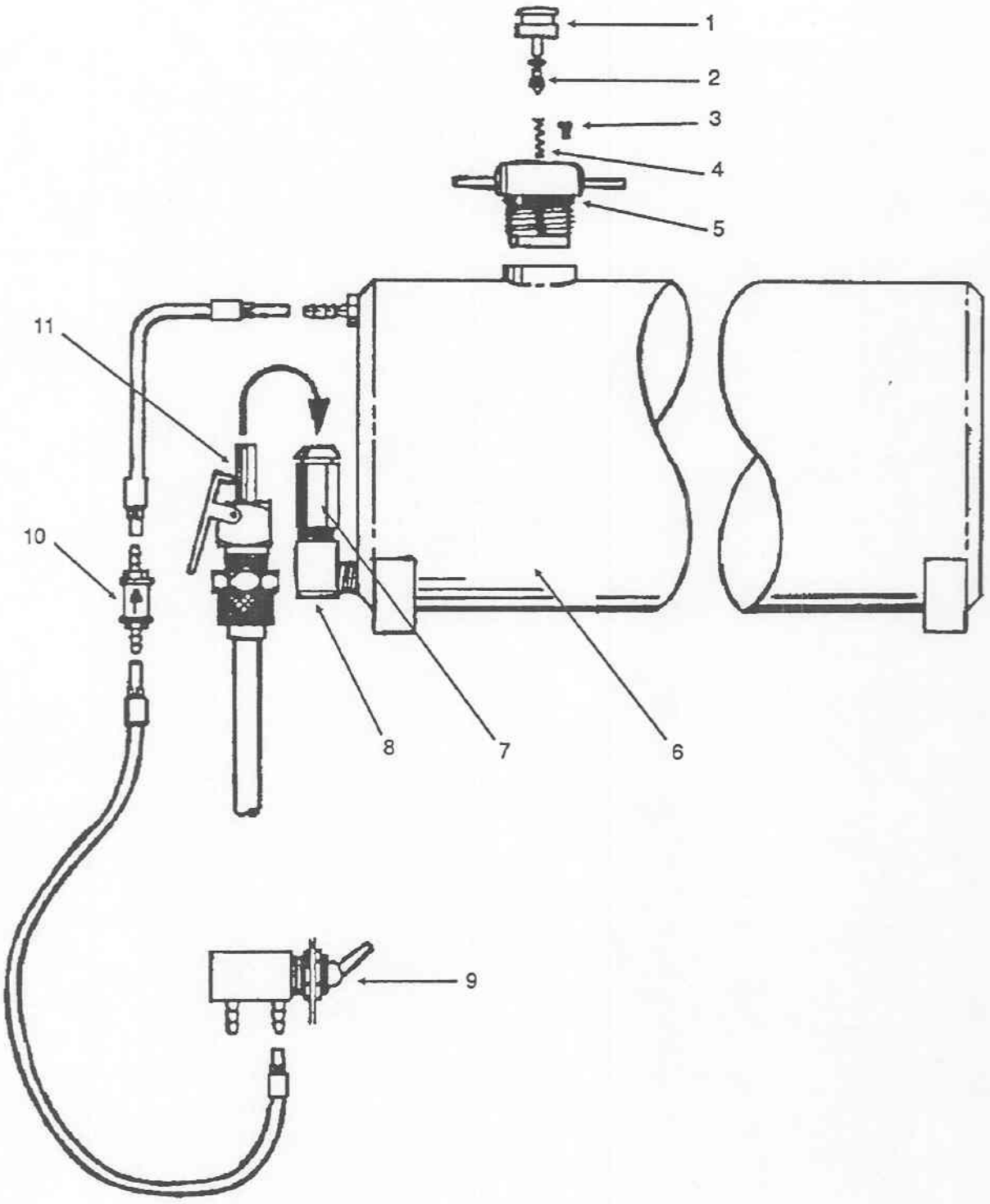

Figure E-14. Water tank system.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION FIG NO.	(1) ILLUSTRATION ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
E-14	1		Vent Button (51840) 10-0111-00	EA	1
E-14	2		Packing, Preformed (51840) 030-001-00	EA	1
E-14	3		Screw, Truss Head, Slotted, 2-56 by 1/8 in (51840) 001-002-00	EA	1
E-14	4		Spring, Helical Compression (51840) 22-0040-00	EA	1
E-14	5		Packing, Preformed (51840) 030-016-00	EA	1
E-14	6		Tank (51840) 36-0039-00	EA	1
E-14	7		Quick-disconnect, Female, 1/4 in id (51840) 026-015-00	EA	1
E-14	8		Elbow, Street, 1/8 in npt by 1/8 in fpt (51840) 021-019-00	EA	1
E-14	9		Valve, Toggle, 3-way (51840) 33-0048-00	EA	1
E-14	10	4820-01-300-0507	Valve, Check (51840) 026-073-00	EA	1
E-14	11		Quick-disconnect with Valve, Male (51840) 026-003-00	EA	1
E-14	*		Plug Assembly, Tank (51840) 36-0041-00	EA	AR
E-14	**		Water Tank Assembly (51840) 36-0023-00	EA	AR

* Includes items 1 through 5.

** Includes items 1 through 8.

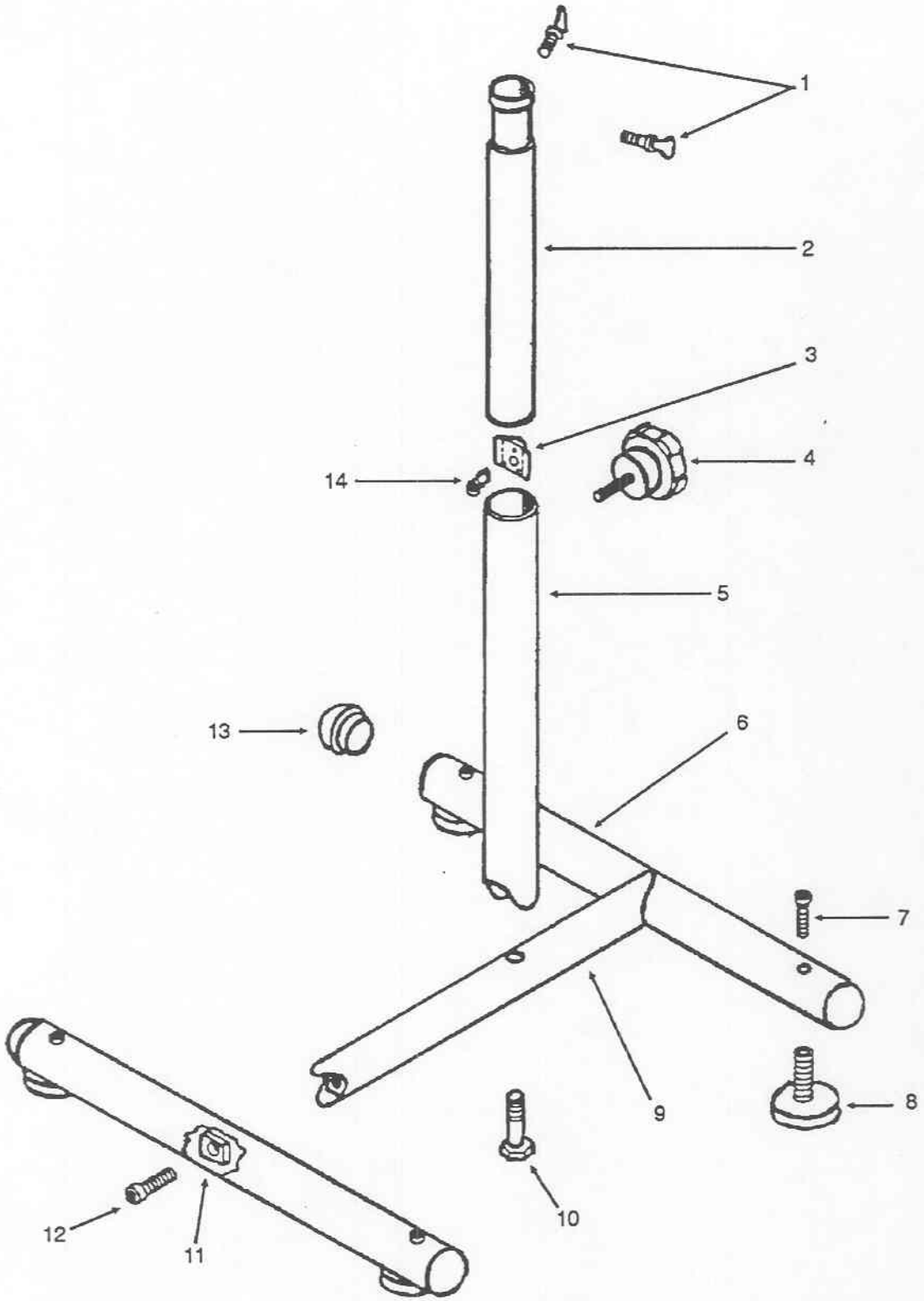

Figure E-15. Frame assembly.

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
E-15	1		Thumbscrew, 5/16-18 by 3/4 in (51840) 001-099-00	EA	2
E-15	2		Post, Inner (51840) 36-0013-00	EA	1
E-15	3		Plate, Nut (51840) 36-0017-00	EA	1
E-15	4		Knob (51840) 027-007-00	EA	1
E-15	5		Post, Outer (51840) 36-0009-00	EA	1
E-15	6		Side Member, Frame (51840) 36-0003-00	EA	2
E-15	7		Cap Screw, Socket Head, 10-32 by 5/8 in (51840) 001-088-00	EA	4
E-15	8		Foot (51840) 36-0004-00	EA	4
E-15	9		Cross Member, Frame (51840) 36-0001-00	EA	1
E-15	10		Cap Screw, Hex Head, 1/2-13 by 3 1/2 in (51840) 001-098-00	EA	1
E-15	11		Clamp Bar (51840) 36-0007-00	EA	2
E-15	12		Cap Screw, Socket Head, 1/2-13 by 2 1/2 in (51840) 001-090-00	EA	2
E-15	13		Bumper, Rubber (51840) 017-002-00	EA	4
E-15	14		Nut, 1/4-20 by 3/8 in (51840) 006-037-00	EA	1

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
N/A	1		Funnel, Plastic, 3 1/4 in od (51840) 009-003-00	EA	1
N/A	2	5220-01-300-0524	Gauge, Comparator, Air (51840) 026-009-00	EA	1
N/A	3		Quick-disconnect, Female, 1/4 in id (51840) 026-065-00	EA	1
N/A	4		Air Vacuum System (51840) 10-0729-00	EA	1
N/A	5		Cup, Oral, Dry (51840) 11-0450-00	EA	5
N/A	6		Valve, Needle (51840) 13-0361-00	EA	2
N/A	7		Tip, Dental Suction (51840) 10-0010-00	EA	3
N/A	8		Handpiece Assembly, AVS (51840) 10-0716-00	EA	1
N/A	9		Filter (51840) 19-0100-00	EA	1
N/A	10		Spool, Foot Control Holder (51840) 22-0993-00	EA	2
N/A	11		Syringe (51840) 23-0088-00	EA	1
N/A	12		Frame Assembly (51840) 36-0015-00	EA	1
N/A	13		Hub, Cart to Frame (51840) 36-0019-00	EA	1
N/A	14		Disk, Hub to Cart (51840) 36-0021-00	EA	1
N/A	15		Housing (51840) 36-0030-00	EA	1
N/A	16		Bracket, Housing, Center Support (51840) 36-0032-00	EA	1
N/A	17		Bezel, Gauge (51840) 36-0025-00	EA	1
N/A	18		Manifold, Hex Shape (51840) 36-0050-00	EA	1

Section II. REPAIR PARTS LIST
FOR
DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
N/A	19		Cover (51840) 36-0062-00	EA	1
N/A	20		Cord, Shock, 16 in (51840) 36-0072-00	EA	1
N/A	21		Handle (51840) 36-0080-00	EA	2
N/A	22		Kit, Accessory (51840) 36-0089-00	KT	1
N/A	23		Faceplate (51840) 36-0103-00	EA	1
N/A	24		Control Assembly (51840) 38-0191-00	EA	1
N/A	25		Foot Control Assembly (51840) 38-0251-00	EA	1
N/A	26		Tubing Assembly, Quick-disconnect, Air Supply (51840) 45-0182-00	EA	1
N/A	27		Tubing Assembly, Handpiece (51840) 98-0448-00	EA	2
N/A	28		Holder, Handpiece, Universal, Black (51840) 99-0519-00	EA	9
N/A	29		Holder, Handpiece, Automatic (51840) 99-0528-00	EA	1
N/A	30		Gauge and Water Regulator Assembly (51840) 24-0252-00	EA	1
N/A	31		Screw, Round Head, Slotted, 10-32 by 3 1/2 in (51840) 001-001-00	EA	2
N/A	32		Screw, Slotted, 10-32 by 3/8 in (51840) 001-004-00	EA	20
N/A	33		Cap Screw, Socket Head, 1/4-20 by 1 in (51840) 001-009-00	EA	4
N/A	34		Cap Screw, Socket Head, 6-32 by 3/8 in (51840) 002-041-00	EA	6
N/A	35		Washer, Flat, Nylon, 3/16 in id (51840) 004-005-00	EA	42

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
N/A	36		Plug, Hole, Plastic, 1/2 in id (51840) 018-012-00	EA	1
N/A	37		Plug, Hex Head, 10-32 (51840) 021-016-00	EA	6
N/A	38		Barb, 10-32 by 1/8 in (For 1/4 in od Tubing) (51840) 023-001-00	EA	16
N/A	39		Barb, 10-32 by 1/16 in (For 1/8 in od Tubing) (51840) 023-004-00	EA	20
N/A	40		Tee, Barbed, 1/16 in (For 1/8 in Tubing) (51840) 023-014-00	EA	2
N/A	41		Body, Tee, 10-32 (51840) 024-071-00	EA	1
N/A	42		Uni-clamp, 1/8 in id (51840) 025-007-00	EA	39
N/A	43		Clamp, Sleeve (51840) 025-015-00	EA	19
N/A	44		Clip, Adhesive Back (51840) 025-017-00	EA	3
N/A	45		Tubing, Regulated Air (Yellow), 1/8 in od (51840) 036-003-00	FT	*
N/A	46		Tubing, Oral Cavity, Water (Red), 1/8 in od (51840) 036-005-00	FT	*
N/A	47		Tubing, Signal Air (Green with Black Dashes) (51840) 036-006-00	FT	*
N/A	48		Tubing, Drive Air (Orange with Black Dashes) (51840) 036-010-00	FT	*
N/A	49		Tubing, Regulated Air (Yellow), 1/4 in od (51840) 036-051-00	FT	*

Section II. REPAIR PARTS LIST FOR DENTAL UNIT

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF MEASURE	(5) QTY
FIG NO.	ITEM NO.				
N/A	50		Tubing, Cold Water (Blue), 1/4 in od (51840) 036-053-00	FT	*

* Specify the length you wish to order.

Section III. SPECIAL TOOLS, TEST, AND SUPPORT EQUIPMENT FOR DENTAL UNIT

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) UNIT OF MEASURE	(6) QTY
1	O		Hemostats (51840) 009-008-00	EA	1
2	O		Syringe, Test (51840) 98-0050-00	EA	1
3	O		Gauge, Test (51840) 024-015-00	EA	1
4	O		Pliers, Snap Ring (51840) 009-007-00	PR	1
5	O	6520-01-296-9899	Pliers, Tubing (51840) 009-014-00	PR	1
6	O		Magnifier, Pocket (51840) 009-009-00	EA	1
7	O		Tools, Installation of Preformed Packing (O-rings) (51840) 009-013-00	KT	1
8	O		Gauge Kit (51840) 023-028-00	KT	1
9	O		Tee Barb and Clamp Kit (51840) 023-014-00	KT	1
10	O		Tubing, 1/8 in by 2 ft (51840) 024-015-00	FT	2
11	O		Tool, Spring Removal (51840) 96-0030-00	EA	1

GLOSSARY

ADEC	ADEC Corporation.
AFR	Air Force regulation.
app	Appendix.
AR	Army regulation.
ASE	Automatic saliva ejector.
AVS	Air vacuum system.
C	Operator or crew.
CAGE	Commercial and government entity.
cm	Centimeter.
D	Depot maintenance.
DA	Department of the Army.
DLAM	Defense Logistics Agency Manual.
DPSC	Defense Personnel Support Center.
DS	Direct support.
EA	Each.
F	Direct support maintenance.
fig	Figure.
FM	Field manual.
fpt	Female pipe thread.
FSC	Federal stock class.
ft	Foot (feet).
GS	General support.
H	General support maintenance.
id	Inner diameter.
in	Inch.
KT	Kit.
MAC	Maintenance allocation chart.
MEDSOM	Medical supply, optical, and maintenance.
mpt	Male pipe thread.
MTOE	Modified table of organization and equipment.
N/A	Not applicable.
NO	Number.
NSN	National stock number.
O	Unit maintenance.
od	Outer diameter.
para	Paragraph.

PMCS	Preventive maintenance checks and services.
PR	Pair.
psi	Pounds per square inch.
PT	Pint.
QA	Quality assurance.
QC	Quality control.
QTY	Quantity.
RO	Roll.
RPL	Repair parts list.
RX	Reparable exchange.
sec	Section.
SB	Supply bulletin.
TB	Technical bulletin.
TM	Technical manual.

INDEX

This index is organized alphabetically by topic and by subtopic within a topic. Topics and subtopics are identified by paragraph number.

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